A dissertation on

"A COMPARATIVE STUDY OF RIPASA AND MODIFIED ALVARADO SCORING SYSTEMS FOR THE DIAGNOSIS OF ACUTE APPENDICITIS"

Dissertation submitted
in partial fulfilment of the regulations
for the award of the degree of

M.S. DEGREE BRANCH – I
GENERAL SURGERY
Of
THE TAMIL NADUDr.M.G.R. MEDICAL UNIVERSITY

ESIC Medical College & PGIMSR,
K.K.Nagar, Chennai- 600078.
APRIL 2016

DECLARATION BY THE CANDIDATE

I solemnly declare that this dissertation entitled **"A COMPARATIVE STUDY OF RIPASA AND MODIFIED ALVARADO SCORING SYSTEMS FOR THE DIAGNOSIS OF ACUTE APPENDICITIS"** is a bonafide and genuine research work carried out by me under the guidance of Prof.R.Anbazhakan, Professor and Head, Department of General Surgery, ESIC Medical College & PGIMSR, K.K.Nagar, Chennai.

This dissertation is being submitted to The Tamil Nadu Dr.M.G.R. Medical University, Chennai, towards partial fulfilment of requirements of the degree of MS (General Surgery) examination to be held in April 2016.

SIGNATURE OF THE CANDIDATE

Dr.SOUNDHARYA.S
M.S. Postgraduate
Dept. of General Surgery
ESIC Medical College & PGIMSR
K.K. Nagar, Chennai- 78.

DATE:

PLACE: Chennai

DECLARATION BY THE CANDIDATE

I hereby declare that Tamilnadu Dr. M.G.R. Medical University, Chennai, shall have the rights to preserve, use and disseminate this dissertation/thesis in print/electronic format for academic/research purpose.

Dr.SOUNDHARYA.S
M.S. Postgraduate
Dept. of General Surgery
ESIC Medical College & PGIMSR
K.K. Nagar, Chennai- 78.

DATE:

PLACE: Chennai

CERTIFICATE OF GUIDE

This is to certify that the dissertation entitled **"A COMPARATIVE STUDY OF RIPASA AND MODIFIED ALVARADO SCORING SYSTEMS FOR THE DIAGNOSIS OF ACUTE APPENDICITIS"** submitted by Dr.Soundharya.S appearing for M.S. Degree Branch-I General Surgery examination in April 2016 is a bonafide research work done by her under my direct guidance and supervision in partial fulfilment of the regulations of the Tamil Nadu Dr.M.G.R University, Chennai. I forward this to the The Tamil Nadu Dr.M.G.R. University, Chennai, Tamilnadu, India.

Dr. R. Anbazhakan, M.S., F.I.A.S
Prof.& Head
Dept. Of General Surgery
ESIC Medical College & PGIMSR
K.K. Nagar, Chennai- 78

Date:

Place: Chennai

CERTIFICATE OF THE CO-GUIDE

This is to certify that the dissertation entitled **"A COMPARATIVE STUDY OF RIPASA AND MODIFIED ALVARADO SCORING SYSTEMS FOR THE DIAGNOSIS OF ACUTE APPENDICITIS"** submitted by Dr.Soundharya.S appearing for M.S. Degree Branch-I General Surgery examination in April 2016 is a bonafide research work done by her under my direct guidance and supervision in partial fulfilment of the regulations of the Tamil Nadu Dr.M.G.R University, Chennai. I forward this to the Tamil Nadu Dr.M.G.R. University, Chennai, Tamil Nadu, India.

Dr. Uday Shamrao Kumbhar
M.S., F.M.A.S., F.I.A.G.E.S
Associate Professor
Dept. Of General Surgery
ESIC Medical College & PGIMSR
K.K. Nagar, Chennai- 78

Date:

Place: Chennai

ENDORSEMENT BY THE DEAN

This is to certify that the dissertation entitled "A COMPARATIVE STUDY OF RIPASA AND MODIFIED ALVARADO SCORING SYSTEMS FOR THE DIAGNOSIS OF ACUTE APPENDICITIS" is a bonafide research work done by Dr.Soundharya.S, post graduate resident in M.S.(General Surgery), ESIC Medical College & PGIMSR, K.K. Nagar, Chennai- 78 under the direct guidance and supervision of Dr.R.Anbazhakan, Prof.& Head, Dept. of General Surgery, ESIC Medical College & PGIMSR, K.K.Nagar, Chennai- 78 in partial fulfilment of the requirements for the degree of M.S. General Surgery of the Tamil Nadu Dr.M.G.R Medical University, Chennai. I forward this to The Tamil Nadu Dr.M.G.R Medical University, Chennai, Tamil Nadu, India.

Dr. Srikumari Damodaram, M.S., M.Ch(SGE),
M.A.M.S., F.A.C.S., F.I.C.S., F.M.M.C
Dean, ESIC Medical College & PGIMSR,
K.K.Nagar, Chennai- 78

Date:

Place: Chennai

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The making of this dissertation has been a very enriching experience. It taught us some crucial things like having a research oriented thinking and about keeping up with the times where evidence based medicine is the norm. It also taught us discipline, better communication skills, and the attitude of always trying to do what is best for the patients. It was a wholly educational project.

CERTIFICATE OF APPROVAL

TO

DR. S. Soundharya
PG in Department of General Surgery
ESIC Medical College & PGIMSR
KK Nagar, Chennai-78

Dear Dr. S. Soundharya,

The Institutional Ethics Committee of ESI PGIMSR reviewed and discussed you application for approval of the proposal entitled "A Comparative Study of RIP ASA and Modified Alwarado Scoring Systems in the Diagnosis of Acute Appendicitis" , No. 04/20/11/2013

The following members of the Ethics Committee were present in the meeting held on 20.11.2013 conducted at ESI PGIMSR, KK Nagar, Chennai-78.

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2.	Dr.Kamalini Sridharan, Co-ordinator/ Prof. & HOD, Dept. of Anesthesia, ESI-PGIMSR.
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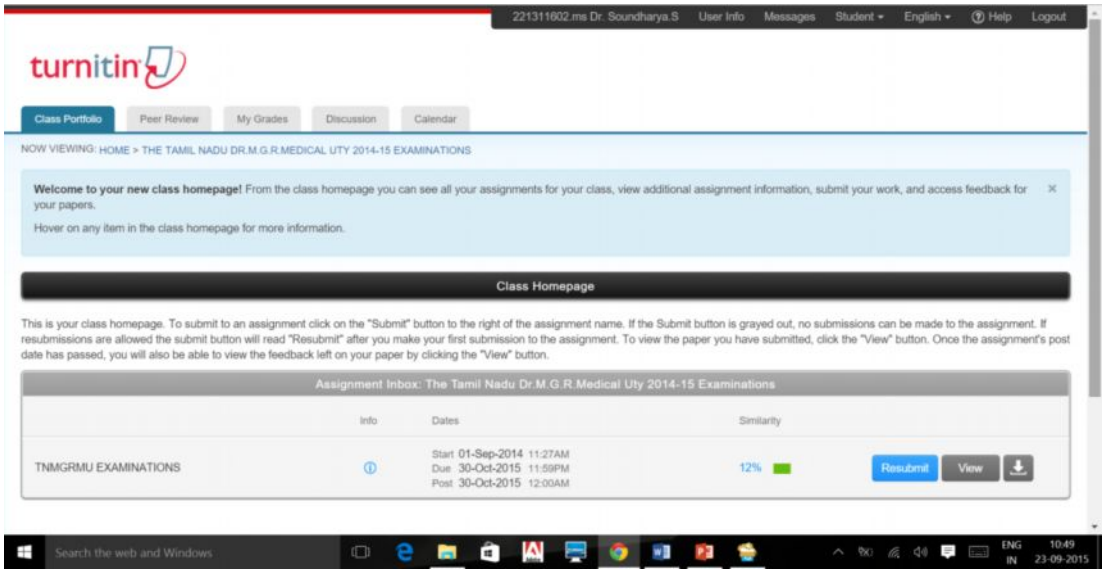
The proposal is approved to be conducted in its presented form.

The Institutional Ethics Committee expects to be informed about the progress of the study and significant adverse effects occurring in the course of the study, any changes in the protocol and patients information / informed consent and asks to be provided a copy of the final report.

[DR. SARADHA SURESH]
CHAIRPERSON
ETHICAL COMMITTEE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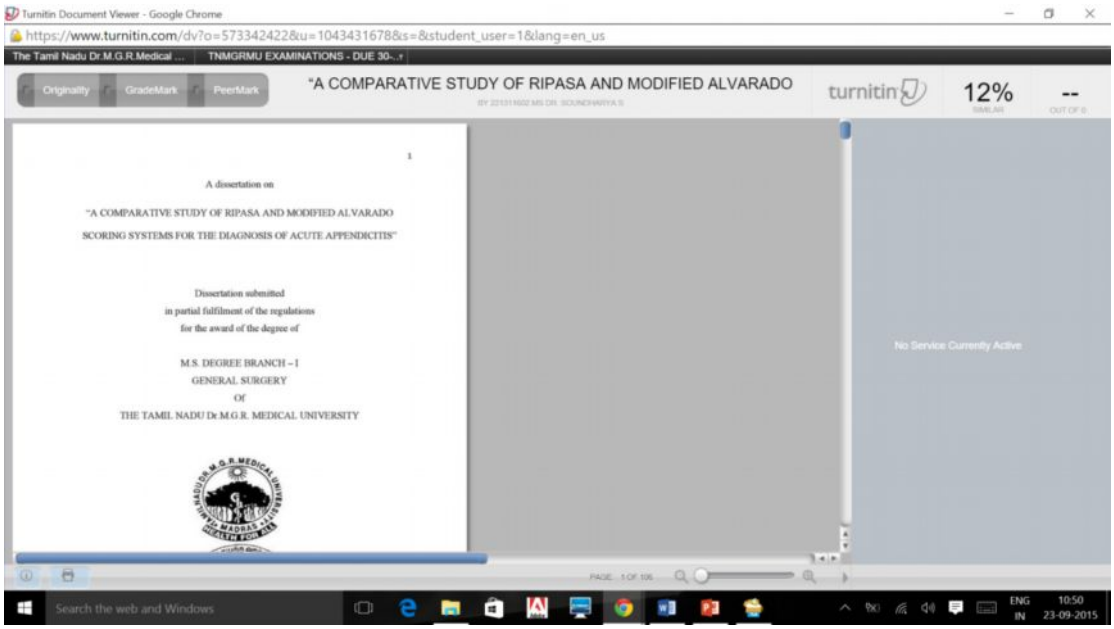
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A COMPARATIVE STUDY OF RIPASA AND MODIFIED ALVARADO SCORING SYSTEMS FOR THE DIAGNOSIS OF ACUTE APPENDICITIS

ABSTRACT

INTRODUCTION

Acute appendicitis is the most common condition encountered in general surgical practice. Alvarado and Modified Alvarado scores (MASS) are the commonly used scoring systems for its diagnosis, but its performance has been found to be poor in certain populations. Hence, we compared the RIPASA score with MASS, to find out which is a better diagnostic tool for acute appendicitis in the Indian population.

METHODS

We enrolled 180 patients who presented with RIF pain in the study. Both RIPASA and MASS were applied to them, but management was carried out as per RIPASA score. Final diagnosis was confirmed either by CT scan, intra-operative finding, or post-operative HPE report. Final diagnosis was analysed against both RIPASA and MASS. Sensitivity, Specificity, Positive Predictive Value, Negative Predictive Value and Diagnostic Accuracy was calculated for both RIPASA and MASS.

RESULTS

It was found that RIPASA was better than MASS in terms of Specificity (96% v/s 89%) and Positive Predictive Value (93% v/s 80%), and also to some extent in terms of Diagnostic Accuracy (75% v/s 71%). Whereas the Sensitivity (49.4% in both) and Negative Predictive Value (69% v/s 67%) were similar in both.

CONCLUSION

RIPASA is a more specific and accurate scoring system in our local population, when compared to MASS. It reduces the number of missed appendicitis cases and also convincingly filters out the group of patients that would need a CT scan for diagnosis (score 5-7.5).

KEYWORDS

Acute Appendicitis, Modified Alvarado score, RIPASA score.

INTRODUCTION

The abdomen is commonly compared to a Pandora's box, and for good reason. Since the abdomen contains within it innumerable viscera and other anatomical components, the diseases of the abdomen gives rise to a lot of clinical curiosity. A meticulous examination of the abdomen and clinical correlation is one of the most important diagnostic tools and becomes cornerstone of management in many conditions presenting with abdominal pain. Despite the vast advances in the medical field in terms of imaging and other investigation modalities, the importance of clinical examination cannot be stressed upon enough[(1)].

Acute appendicitis is one of the commonest causes for acute abdomen in any general surgical practice[(2)]. From the time that it was first described by Reginald Heber Fitz in 1886[(3)], it has remained a topic of serial research works for various factors ranging from its aetiology, to its management options.

One of the most researched fields pertaining to appendicitis is the one involving diagnosis. Over the years various types of investigations including laboratory and radiological, have been studied in detail with the aid of trials. These were conducted in the hope of finding the most sensitive test for diagnosing acute appendicitis. But in spite of the vast advances in the field of medicine, it has been time and again opined by various clinicians and authors

that appendicitis is one condition whose diagnosis relies mainly upon the clinical features. As quoted by Bailey & Love, "Notwithstanding advances in modern radiographic imaging and diagnostic laboratory investigations, the diagnosis of appendicitis remains essentially clinical, requiring a mixture of observation, clinical acumen, and surgical science"[1].

So much has been stressed about the various methods of diagnosis, only because the same is extremely important. Appendicitis, which if caught early and managed appropriately can be the most uneventful surgery, while the other end of the spectrum is also true, that when missed, appendicitis can turn into a disease with great morbidity and mortality.

Hence, having understood the importance for early and right diagnosis, and having understood that clinical evaluation provides the best and most accurate diagnostic modality for appendicitis, many clinical scoring systems have been developed over the years[4]. This has aided the clinician to a large extent in coming to the right diagnosis and providing early management. What began as a single scoring system, evolved into many over the years, as people constantly made modifications to the existing scoring systems based on the local demographics or by adding more factors. This brought along the next problem, of finding the single best scoring system, or the scoring system with the maximum sensitivity and diagnostic accuracy. As a result, multiple studies have been done with randomised controlled trials comparing various

scoring systems in different parts of the world. To date, the most commonly used scoring system worldwide is the Alvarado and the Modified Alvarado scoring systems (MASS).[4] Hence, these have almost been considered as the undocumented gold standard scoring system among clinicians worldwide. So much so that any new scoring system that has been developed is usually first compared to this.

Raja Isteri Pengiran Anak Saleha Appendicitis (RIPASA) score is a fairly newer scoring system developed in 2008, where a study was done in RIPAS Hospital, Brunnei Darssalem[5,6], to find a more favourable scoring system than Alvarado and Modified Alvarado as these were found to have poor sensitivity and specificity in Middle Eastern and Asian population. Following the development of it, a randomised control trial was also done at the same hospital comparing the RIPASA and Alvarado scoring systems and proving the superiority of the former over the latter.

In the present study, RIPASA and Modified Alvarado scoring systems (MASS)are compared among the local population in the subcontinent of India, to find out which scoring system is more relevant and applicable, in order to aid early diagnosis of acute appendicitis.

Appendicitis is one of the routine conditions evoking emergency surgery worldwide [2] as also in our hospital. The statistics of appendicitis in our hospital are as follows, and the sample size was calculated accordingly.

INCIDENCE OF ACUTE APPENDICITIS IN ESIC MEDICAL COLLEGE & PGIMSR FROM JAN – OCT 2013.

- Total number of patients presenting with Right Iliac Fossa pain – 234
- Total number of patients who underwent emergency appendicectomy – 151
- Total number of patients managed conservatively – 83

Review of literature

REVIEW OF LITERATURE

HISTORICAL REVIEW[7]

Appendicitis has been a much studied about topic since the early years. Some literature is available which dates back the study of appendix to as early back as the 3rd century, and the Greek rule under Caesar.

The anatomical study dates back to 1492, where Leonardo da Vinci had delineated the organ clearly in his diagrams. He called it "Orecchio" which literally means ear, to denote the auricular appendage of the caecum.

In 1521, the appendix was illustrated by the physician-anatomist B D Carpi.

The name "Vermiform appendix" was first coined by V Vidius in 1530, because of its worm-like appearance.

Supplementary data about the appendicular anatomy was published by Morgagni in 1719, in his Adversaria Anatomica.

Jean Fernel, a French physician, narrated his first case of perforated appendix, following an autopsy on a 7- year old girl, in 1544.

Another post-mortem study in a boy suffering from chronic abdominal pain, showing appendicitis, was described by Von Hilden in 1652.

In 1711, Lorenz Heister, a pupil of Boerhaave, described a small abscess adjacent to a blackened appendix in a post-mortem study of an executed criminal.

In 1759, Mestivier described the post-mortem finding of a 45-year old man whose death occurred after incision and drainage of an abscess in the right lower quadrant of the abdomen. He describes the abscess as a consequence of an appendicular perforation due to a pin. This started a long course of discussions as foreign bodies were identified as causes of obstruction and perforation of the appendix.

Faecolith as a cause for perforated appendix, was described as early as 1812 by John Parkinson, found during the autopsy of a 12- year old boy.

Louyer-Villermay demonstrated gangrenous appendices during autopsies in two young men at a presentation in a medical conference held at Paris, in 1824.

Encouraged by Louyer-Villermay's work, Parisian physician Francois Melier documented six additional descriptions of appendicitis encountered at autopsy, one of which he even suspected prior to death, in 1827. He then went on to suggest the possibility of prior diagnosis and surgical removal of the appendix.

In 1839, Bright and Addison, the renowned physicians of Guy's Hospital, described the symptomatology of appendicitis in their book "Elements of Practical Medicine", and also stated that the appendix was the cause for most of the inflammatory processes in the right iliac fossa.

In spite of the repeated observations of the appendicular pathology in right lower quadrant inflammatory disease, the most likely cause of persistent mortality was due to unclear therapeutic implications.

In June 1886, Dr. Reginald H. Fitz, Professor of Pathological Anatomy at Harvard University, presented a paper about the vermiform appendix being the most common cause of inflammatory disease of the right lower quadrant and he also clearly explained most of the clinical features and the importance of early surgical intervention. It was for the first time the word "Appendicitis" was used.

THE APPENDIX

EMBRYOLOGY[8]

During the sixth week of gestation, when the descent of colon takes place, appendix arises as an out pouching of the caecal bud (Fig.1). Initially, it is of the same calibre as the caecum. As the caecum enlarges and attains its normal position, the appendix gets pushed medially. Sometimes, there can be a non-classical evolution that leads to an anatomically mal-located appendix,

which would in turn lead to diagnostic difficulties when there is an appendicular pathology.

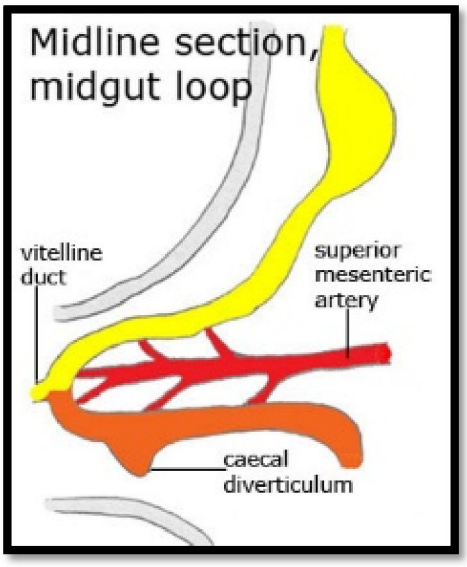


Figure 1. Embryology of the Appendix

ANATOMY[9,10]

The vermiform appendix is a worm shaped organ situated at the posteromedial aspect of the caecum, where the three taenia coli coalesce about 2cm below the ileocaecal junction.

The appendix is notorious for its varied positions (Fig.2), such as retrocaecal, retrocolic, pelvic, subcaecal, pre-ileal and post-ileal. Of these, the most common are retrocaecal, retrocolic and pelvic. To trace the appendix, the anterior taenia coli is identified and traced down the ascending colon and caecum, and the base of the appendix lies at the point where the three taenia coli merge into the longitudinal muscle. The length of the appendix can vary

from 2-20 cm, and its diameter from 5-7mm. It is often relatively longer during childhood, and may shorten due to atrophy after mid-adult period. The appendix is connected to the ileal mesentery by a short triangular fold called the mesoappendix. It extends along the whole viscus, almost up to the tip.

A semilunar fold is present below and posterior to the ileocaecal opening, and it acts as a valve through which the lumen of the appendix opens into the caecum. It is called the Valve of Gerlach.

The appendix considered as a vestigial organ all these years, is recently thought to have an immunological role owing to the numerous patches of lymphoid tissue that it contains.

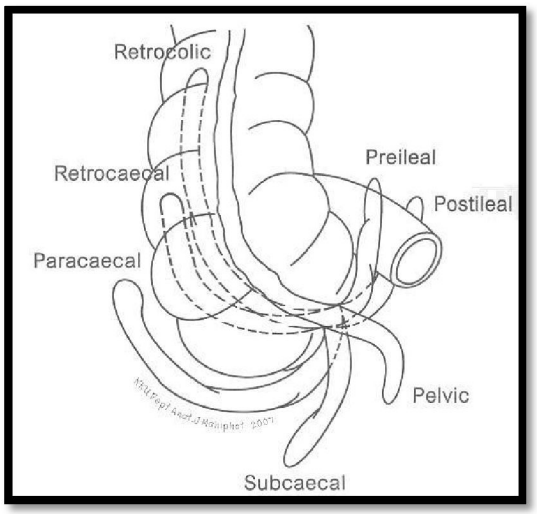


Figure 2. Normal variant anatomical positions of the appendix

VASCULAR SUPPLY AND LYMPHATIC DRAINAGE

APPENDICULAR ARTERY

The blood supply to the appendix is from the appendicular artery (Fig.3), which is a branch of the ileocolic artery. It courses behind the terminal ileum and into the mesoappendix, close to the base. It gives off a recurrent branch at this site, which forms an anastomosis at the base, with the posterior caecal artery. The main appendicular artery itself traverses till the tip of the appendix. The terminal part which overlies the wall of the appendix may get thrombosed in acute appendicitis and is the reason for necrosis or gangrene of the tip of the organ. It is common to find two or more accessory arteries, and this varies from individual to individual.

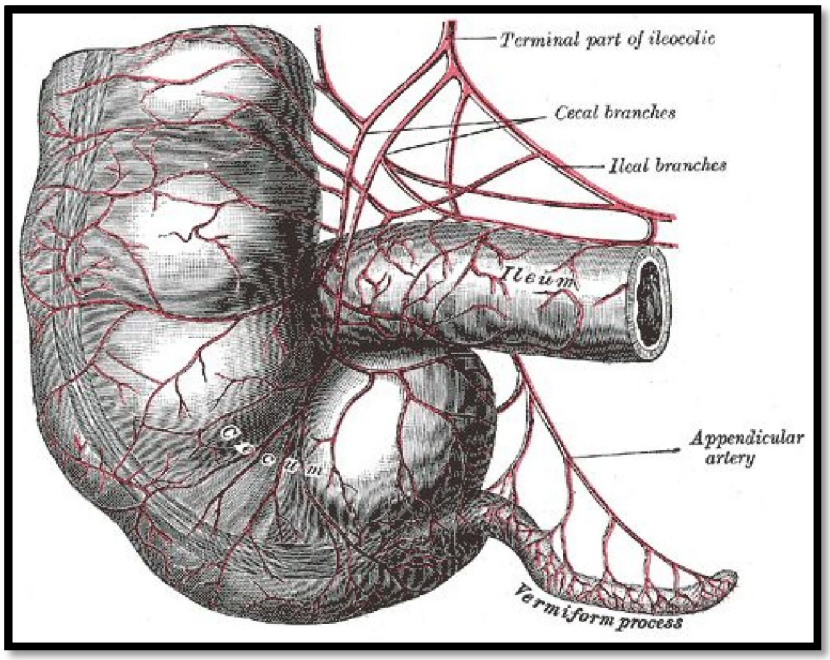


Figure 3. Vascular supply of the appendix

APPENDICULAR VEINS

The venous drainage of the appendix is by one or more appendicular veins. These drain into the posterior caecal or ileocolic vein, which in turn drain into the superior mesenteric vein.

LYMPHATICS

As mentioned earlier, the appendicular wall is rich in lymphatic tissue, and these drain through numerous (about 8-15 in number) lymphatic vessels into the mesoappendix. From here, they unite to form three or four larger vessels and ultimately drain into the lymphatic vessels draining the ascending colon, and finally terminate in the superior and inferior ileocolic chain of nodes (Fig.4).

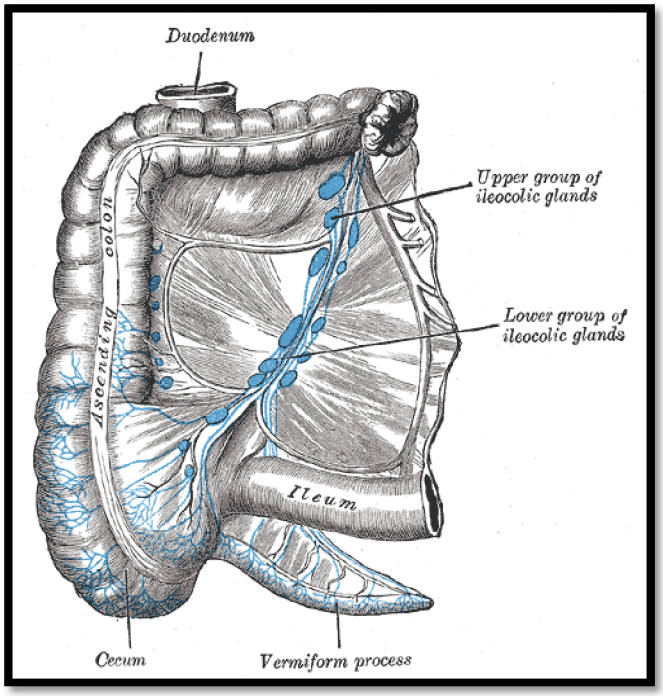


Figure 4. Lymphatic drainage of the appendix.

INNERVATION

Innervation of the appendix and the overlying visceral peritoneum is by the sympathetic and parasympathetic nerves from the superior mesenteric plexus.

IMMUNOLOGICAL FUNCTION[11]

Up until recent times, it had been thought that the appendix was a vestigial organ and that it had no definite role in the physiology of the human body. Of late, it has been proposed and widely accepted that the appendix indeed has a role to play in the immunity of the body. It has been found to secrete immunoglobulins, especially Immunoglobulin A (IgA) and forms a part of the gut-associated lymphoid tissue (GALT) system. However appendicectomy does not predispose to any immunocompromised manifestations.

ACUTE APPENDICITIS

INCIDENCE[2,12]

Appendicitis is one of the commonest acute conditions manifesting as pain abdomen in the Emergency room. The life time rate for appendicectomy is 12% for men and 25% for women, with approximately 7% of all people undergoing appendicectomy in their lifetime.

Most commonly affected age group is second to fourth decades of life, with mean age of 31.3 years and median age of 22 years.

Both sexes are affected, with a slight male to female predominance, about 1.2-1.3:1).

GEOGRAPHIC DISTRIBUTION[2,10,12]

Appendicitis is more frequently seen in USA, Canada, UK, Australia, New Zealand, and in the white population in South Africa. It is comparatively rare in Asians and Central Africans. Studies have shown the possibility of the disease being determined by environmental factors, which is further strengthened by the fact that when people from latter areas migrate to the western world or change to a western diet, appendicitis becomes more prevalent in them. Appendicitis is undoubtedly less common in races that habitually have bulk cellulose diet.

AETIOLOGY[2]

In spite of the common nature of the condition and the innumerable studies done, the etiological factors leading up to the condition of appendicitis still remains unknown and obscure. Universally, it had been rare prior to the adoption of the western way of living. It has been observed that over the years, appendicitis has risen from being an insignificant disease to the most common serious intra-abdominal inflammatory pathology of the western civilized areas, and this has been a matter of much speculation. It is also

observed that appendicitis is relatively rare in rural areas and economically less developed countries, and incidence increases with economic development, migration to urban areas and western countries. Even though exact etiological cause is not known, it is clear that many contributory factors are responsible for the development of appendicitis.

AGE AND SEX

Though the most common age group for appendicitis is the second to fourth decade, no age is totally immune to the disease. There are case reports of appendicitis in a new born, and also at the other extreme of age. About 65% of the patients are under the age of 30 years, and only 2% are 60 years and above. The incidence of appendicitis is maximum between 20 to 30 years[13].

FAMILIAL SUSCEPTIBILITY

There are reported instances of appendicitis occurring in families, suggesting a possible inherited susceptibility. Reports by Baker[14], Andersson et al[15] suggested high incidence of appendicitis among immediate family members. Downs[16] operated upon 16 out of 22 closely related individuals for appendicitis. In each case, the cause of appendicitis was a fibrous band arising from the base of the appendix which was attached to the lateral aspect of the caecum and causing a kinking of the base. Males and females shared the anomaly equally.

SEASONAL FACTORS

There may be a possible association between seasonal respiratory infections and appendicitis, especially in children. An upper respiratory tract infection could lead to the simultaneous involvement of tonsils and the lymphoid in the appendix. Origin is postulated to be blood borne[17,18].

RACE AND DIET[19,20,21]

Appendicitis, in general, is associated with a diet that is non-roughage and high on meat. Racial distribution is mainly due to the associated economical and diet status of the particular race. The more civilized countries have been found to have a higher incidence of the disease. Appendicitis has an interesting national distribution. It is common in highly industrialized countries like Great Britain, US, France and Germany. It is low in Denmark and Sweden, but even lower in Spain, Greece, Italy and the rural parts of Romania. For example, in a study done by Lucas Championnier[21]in Romania, the incidence of appendicitis in the rural areas was 1 in 22,000, while in cities, it was 1 in 22 patients.

OTHER MECHANICAL CAUSES FOR THE DISEASE AND ITS COMPLICATIONS

- **FAECOLITHS**

Non-calcified inspissated faecal matter is called faecolith. The presence of a faecolith in the lumen causes mechanical obstruction, and due to decreased lymphatic and vascular flow, causes ulceration or perforation in the part of the appendix distal to it. It is a common finding in a large proportion of appendices found during appendicectomy surgery.[22]

- **CONSTIPATION AND PURGATION**

In a case of acute appendicitis, administration of purgatives increases the chance of perforation.

- **PARASITES**

Most notorious of parasitic infestations are those with round worms, where they lodge and cause obstruction at the ileocaecal junction or at the lumen of the appendix and hence cause an acute inflammation that progresses into perforation. Other parasites known to cause the disease are thread worm which cause appendicitis either by obstruction of the lumen or by injury to the mucous membrane.[23]

- **BACTERIAL FACTORS**

Bacterial infection of the appendix is a known cause of acute appendicitis. The pathophysiology is by mucosal erosions of the appendicular wall, which allows the bacteria to migrate into the submucosal layer, thus causing an acute infection. The causative bacteria come to affect the appendix by two possible routes. One is by direct contamination by the resident variable and mixed flora in the intestine, which is more common, or the other route is by haematogenous spread.[23,24]

- **BANDS AND ADHESIONS**

Bands or adhesions can cause kinking of the appendix and produce appendicitis due to the acute obstruction. These may be bands of congenital origin which are basically abnormal peritoneal attachments, or adhesions that are acquired either by repeated infections or post-operatively.

- **STRANGULATION WITHIN A HERNIAL SAC**

Appendix may be a content in a hernia sac, either by itself or along with other contents, and this may produce a picture of appendicitis due to obstruction or strangulation of the hernia sac. Appendix found as a content in an inguinal hernia is called Amyand hernia [25].

- **TRAUMA**

Though this is a very rare cause for appendicitis, it is still a documented possibility and to be considered especially in cases of blunt trauma to the abdomen in the right iliac fossa. The pathophysiology is that faecolith gets dislodged during the trauma and causes obstruction in the appendicular lumen. Cases of post-traumatic appendicitis have been reported by Birrel, Black and BhajeKar[26].

- **SECONDARY TO MALIGNANCY**

Carcinoma of the appendix, either primary or secondaries from elsewhere, can present as acute appendicitis or even as a perforation due to encroachment of the growth along the wall and obstructing the lumen. Literature review shows cases that presented as acute appendicitis secondary to metastasis with primary in the breast.[27,28]

- **EPIDEMIC FORM**

Acute appendicitis may occur in an epidemic form, where the causative organism is usually Streptococci, and the portal of entry is through the nasopharynx[24].

- **AMOEBIC APPENDICITIS**

Though extremely rare, there have been a few reported cases of amoebic appendicitis[29].

- **VASCULAR FACTORS**

The main blood supply to the appendix is by the appendicular artery and it is an end artery. So any cause leading to obstruction of the blood flow would result in ischemia, inflammation and secondary infection of the appendix.

PATHOLOGY OF ACUTE APPENDICITIS[30]

GROSS APPEARANCE –

The macroscopic appearance of an appendix during an acute inflammation (Fig.5) varies from person to person, and the external appearance mostly depends upon the stage at presentation and the underlying pathophysiology. Based on these, the gross appearances can range among any of the following –

- Appendix may appear normal in size and serosa may appear normal with its shiny appearance
- Patchy hyperemia and suffusion
- Continuous areas of suffusion and congestion
- Dull grey-white appearance with suppurative inflammatory exudates
- Increase in the size of the diameter, usually up to 1cm.
- Focal areas of abscess formation in the mesoappendix
- Focal gangrenous necrosis of the wall
- Area of frank perforation
- Localized complications, such as a periappendiceal abscess.

Figure 5. Gross appearance of appendicitis.

MICROSCOPIC APPEARANCE –

The microscopic appearances in appendicitis (Fig.6) as well vary with stage and pathophysiology of the disease, but the minimum criteria to diagnose acute appendicitis microscopically are-

- Mucosal congestion and edema
- Infiltrate of polymorphonuclear inflammatory cells in the mucosa
- Focal small areas of mural ulceration
- With or without crypt abscesses
- Micro-abscesses, submucosal involvement of the inflammatory cell infiltrate are seen later in the course of the disease.

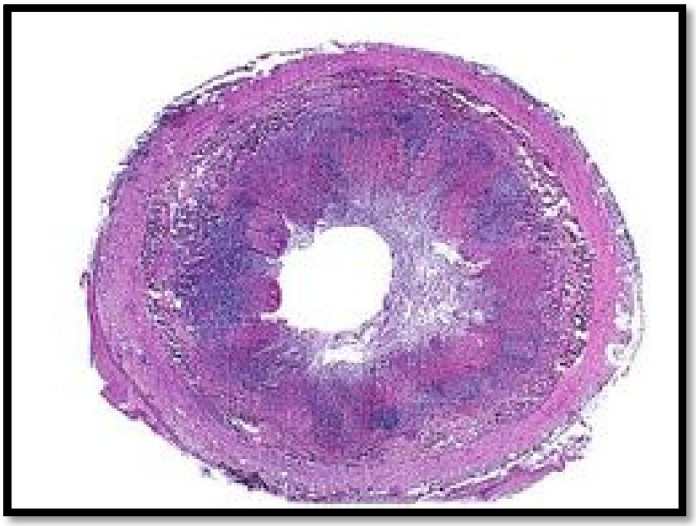


Figure 6. Microscopic appearance of appendicitis

PATHOGENESIS OF ACUTE APPENDICITIS[9,13,30]

Appendicitis begins due to obstruction of the lumen (Fig.7), due to various causes as described earlier. This leads to a closed loop obstruction. As there is continued mucosal secretion from the obstructed part, this leads to increased and rapid distension of the appendix. The distension stimulates the visceral afferent nerve fibres, and is responsible for the vague/diffuse pain in the periumbilical region. On progress of the condition, it leads to rapid multiplication of bacteria from superadded infection, which leads to further distension. This causes reflex nausea and vomiting. Due to the distension, there is capillary and venous occlusion, and due to involvement of the serosa and parietal peritoneum, pain migrates to right iliac fossa. On further arterial occlusion, there is increased bacterial invasion, which leads to peritonitis and manifests as fever, tachycardia and leucocytosis. The greater omentum attempts to limit the peritonitis by localizing the spread of peritoneal infection, and hence is known as the abdominal policeman.

Two types of acute appendicitis have been recognized. These are –

1. NON-OBSTRUCTIVE ACUTE APPENDICITIS

The process of inflammation usually begins in the mucosa, sometimes in the lymphatic follicles. Once infection reaches the submucosa, it progresses rapidly. The organ turns red, inflamed and haemorrhages into the mucous membrane. If left untreated, the tip may become gangrenous, because at this part the artery is intramural and is more prone to occlusion by inflammation or thrombosis.

But in non-obstructive appendicitis per se, progress is slower, allowing time for the omentum to form a protective barrier and localize the peritonitis. In most of the cases, infection does not even cross the mucosal layer (i.e. catarrhal inflammation).

Non-obstructive appendicitis terminates in any of the following ways – Resolution, Ulceration, Suppuration, Fibrosis, or Gangrene. The former are more common than the latter.

2. OBSTRUCTIVE APPENDICITIS

The pathogenesis and pathological features of obstructive appendicitis have already been discussed in detail. It is important to remember the fact that the consequence of an appendicitis in an obstructive pathology depend on the following four factors –

1. The contents in the lumen
2. Degree of obstruction
3. Continued secretion by the mucosa
4. Inelastic character of the serosa

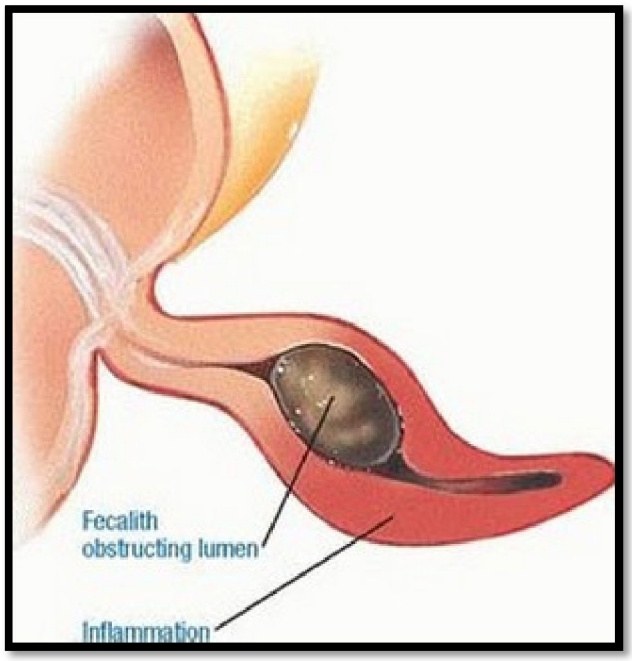


Figure 7. Faecolith causing obstructive appendicitis

TYPES OF APPENDICITIS

a) Acute catarrhal appendicitis

b) Acute focal appendicitis

c) Acute suppurative appendicitis

d) Gangrenous appendicitis

e) Perforative appendicitis

A pathological study was done by Martin Brumer in 1970[3] in 404 appendicectomy specimens and the incidence was as follows –

a) Normal – 27%
b) Recurrent – 23%
c) Acute – 28.8%
d) Suppurative – 35.2%
e) Gangrenous – 9.9%
f) Perforated – 8.4%

CLINICAL FEATURES[1,9,10,13]

SYMPTOMS

- **PAIN ABDOMEN**

Pain abdomen is the presenting feature in acute appendicitis. In majority of the cases, it is classical and almost diagnostic, with the patient complaining of acute onset pain abdomen, initially periumbilical and colicky, and later on migrates to Right Iliac Fossa (RIF). But there can be atypical presentations of pain abdomen and these are usually associated with the variable anatomical positions. In retrocaecal position of the appendix, patient complains of pain either in the flank or back, in pelvic appendix, patient may have pain in the suprapubic region and in the retroileal appendix, patient may have testicular pain due to irritation of the spermatic artery and the ureter.

- **ANOREXIA**

  Loss of appetite is a common complaint second to pain abdomen.

- **VOMITING**

  Vomiting is seen in 3/4th of the patients, and it occurs following pain abdomen. It is due to reflex pyloric spasm, neural stimulation or due to ileus.

- **FEVER**

  Fever occurs following vomiting.

MURPHY'S TRIAD is constituted by Pain ➡ Vomiting ➡ Fever

- **OTHERS**

  Other associated but infrequent symptoms seen are diarrhoea, obstipation, abdominal mass

SIGNS

- **GENERAL CONDITION:** Patient could be toxic, dehydrated based on the severity of the disease. He may have fever and tachycardia.
- **Mc BURNEY'S SIGN:** It is described as the point of maximum tenderness. It lies at the junction between the medial 2/3rd and the lateral 1/3rd along the imaginary line that joins the umbilicus and the right anterior superior iliac spine. It was first described by Mc Burney in 1890. (Fig. 8.1)

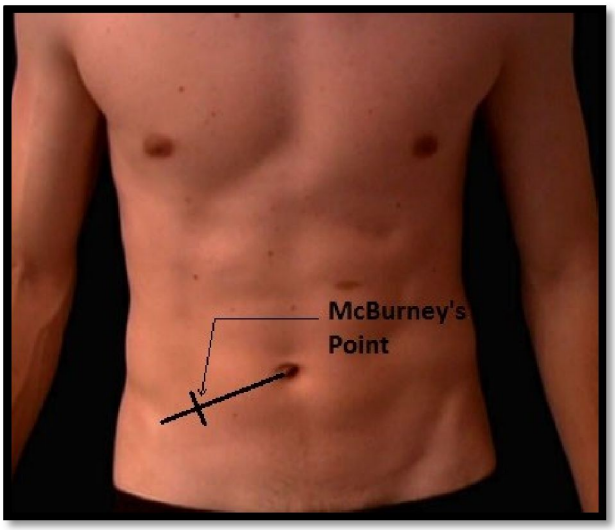


Figure 8.1. McBurney's Sign

- **BLUMBERG SIGN:** Commonly known as Rebound tenderness. A hand is placed on the right iliac fossa and progressively pressed with each movement of expiration. It is then released suddenly. If the sign is positive, the patient will wince or cry with pain. This indicates inflammation of the parietal peritoneum. (Fig. 8.2)

Figure 8.2. Blumberg Sign

- **ROVSING'S SIGN:** When pressure is applied on the abdomen in the left iliac fossa, it causes pain in the right iliac fossa. Many theories have been postulated for this- Williams said pressure on the left side of the colon, forces gas into the caecum; Yashi et al (1958) disproved the involvement of colonic gas by putting a cannula into the caecum. Sheperd suggested adhesions of inflamed appendix to the pelvic colon as a cause for this sign. (Fig. 8.3)

Figure 8.3. Rovsing's sign

- **COPE'S SIGN:** Pain in the right hypogastrium on flexion and internal rotation of the right thigh, also known as Obturator Internus test. The cause for the pain is that the inflamed appendix overlying the obturator internus and iliacus, causes spasm in these muscles and stretching of these muscles by flexion/internal rotation of the hip causes pain. (Fig.8.4)

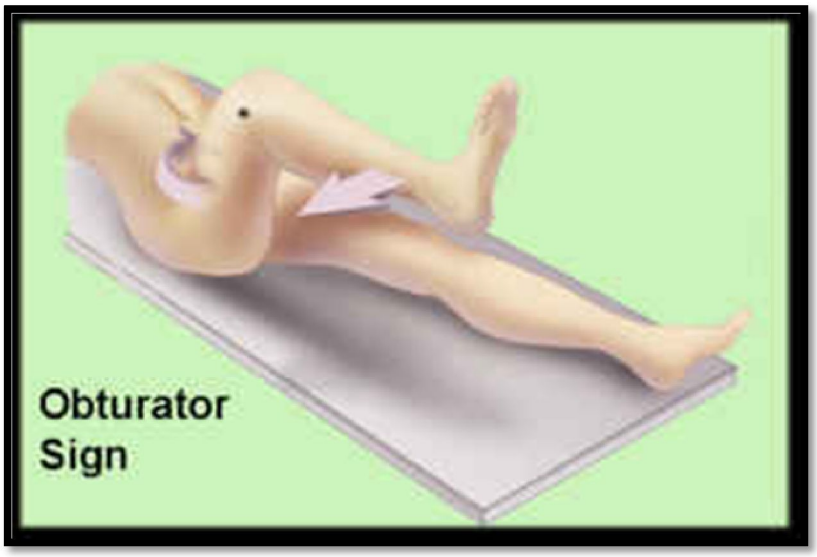


Figure 8.4. Cope's (Obturator Internus) Sign

- **PSOAS SIGN:** Pain elicited upon extension of right thigh, due to irritation of psoas muscle, as seen in retrocaecal appendicitis. (Fig.8.5)

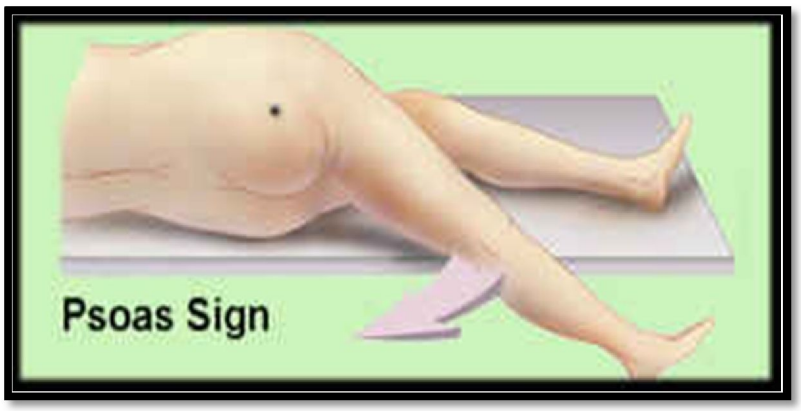


Figure 8.5. Psoas Sign

- **HYPERAESTHESIA IN SHERREN'S TRIANGLE:** Sherren's triangle is bounded by lines joining the umbilicus, Right anterior superior iliac spine and pubic symphysis. Skin overlying this triangle is gently struck and on comparing to the opposite side, hyperaesthesia is elicited. (Fig. 8.6)

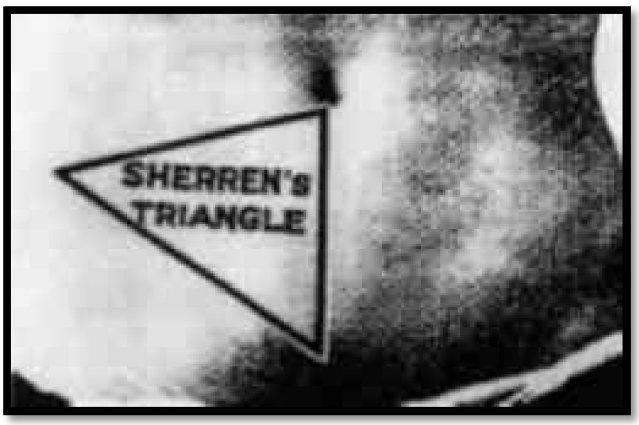


Figure 8.6. Hyperaesthesia in Sherren's triangle

- **BALDWIN'S TEST:** It is positive in retrocaecal appendicitis. Light pressure is applied and maintained over the point of maximum tenderness in the right flank, and the patient is asked to raise his right lower limb keeping the knee extended. Beyond a point, patient will be unable to raise his leg due to pain and drops it.

- **POINTING TEST:** Patient is asked to point the site of maximum pain on coughing, using one finger. If it corresponds with the site of maximum tenderness, it proves the site of inflammation.

- **ALDER'S TEST:** Also known as shifting tenderness. The point of maximum tenderness is marked in supine position, and patient is asked to turn to left lateral position, and point of maximum tenderness is marked again. If there is a shift in the marked point, then it is unlikely to be due to appendicitis. This test is useful in differentiating appendicitis from mesenteric lymphadenitis and painful uterine conditions in pregnancy.

- **RECTAL EXAMINATION:** It is a must in all cases of appendicitis. Tenderness on right lateral wall, especially when compared to posterior and left lateral wall is a significant sign. Sometimes, this may be the only positive sign in case of a pelvic appendicitis.

DIFFERENTIAL DIAGNOSIS[1,9,10,13]

1. PRESCHOOL CHILDREN

- Intussusception
- Meckel diverticulitis
- Acute gastroenteritis

2. SCHOOL AGE CHILDREN

- Gastroenteritis
- Functional pain
- Constipation
- Non-specific abdominal pain

3. ADOLESCENT BOYS/YOUNG ADULT MEN

- Crohn's disease
- Ulcerative colitis
- Epididymitis

4. ADOLESCENT GIRLS/YOUNG ADULT WOMEN

- Pelvic inflammatory disease
- Ruptured ovarian cyst
- Ovarian torsion
- Urinary tract infection

5. ELDERLY

- Malignancy in GIT
- Diverticulitis
- Perforated ulcer

INVESTIGATIONS[1,9,10,13]

1. LABORATORY TESTS

- Complete blood count – Leucocyte count >10,000/mm^3, Left shift of neutrophils with normal total white blood cell count
- C-reactive protein- elevated
- Urine analysis- to determine presence of genitourinary tract inflammation

2. RADIOGRAPHIC INVESTIGATIONS

- **Plain X-ray of the abdomen-** may show an appendiceal calculus, Sentinel loop (dilated, atonic ileum with air-fluid level), Caecal dilatation, Blurring of the right psoas outline, Widening/blurring of the preperitoneal fat line, Haziness in right lower quadrant due to fluid and edema, Scoliosis with concavity to the right, Right lower quadrant mass causing indentation at the caecum, and rarely gas in the appendix.

- **Ultrasonography[31]-** Findings of non-compressible, non-peristaltic tubular structure, with a blind ending, diameter of 6mm or more, appendicolith causing an acoustic shadow. Other supportive features are high echogenicity, surrounding fluid or abscess, non-compressible surrounding fat, caecal pole edema. (Fig. 9.1)

  Ultrasonography has a sensitivity of about 88% and specificity of 93% for diagnosing appendicitis[31]. But there are certain disadvantages–

  - It is user-dependent.
  - False negative results seen in appendicitis of the appendiceal tip, gangrenous, perforated appendix, retrocaecal appendicitis, gas-filled appendix.
  - False positive results may be seen in resolving appendicitis, inflammatory bowel disease and dilated fallopian tube.

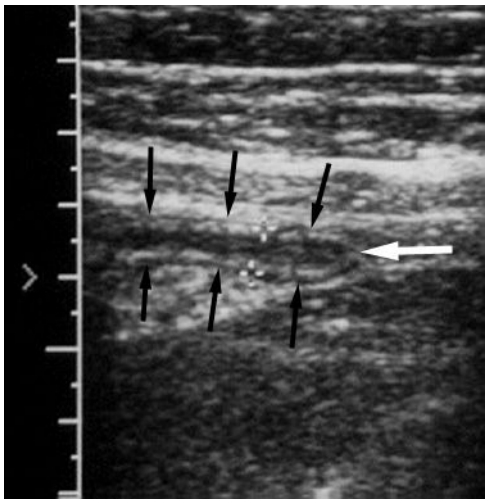


Figure 9.1. USG in acute appendicitis

- **COMPUTERIZED TOMOGRAPHY[(32)]-** CT scan findings of appendicitis include appendicular diameter more than 6 mm, appendicolith may be picked up, failure of the appendix to fill with oral contrast, air up to its tip and enhancement of its wall with IV contrast, inflammatory changes such as fat attenuation, inflammatory phlegmon, fluid, abscess, lymphadenopathy, caecal thickening, extraluminal gas, arrow-head sign (where the lumen of the caecum points towards the opening of the appendix). (Fig. 9.2)Sensitivity and specificity of CT scan comes close to 100%.

Figure 9.2. CT in acute appendicitis

- **NUCLEAR MEDICINE[33]-** Two types of imaging studies are useful in evaluation of patients with suspected appendicitis- Radiolabelled white blood cells ($Tc^{99}m$ WBC) and immunoglobulin G ($Tc^{99}m$ IgG). These studies localize leucocytes/IgG at the site of appendiceal inflammation with the use of scintigraphy. (Fig. 9.3)

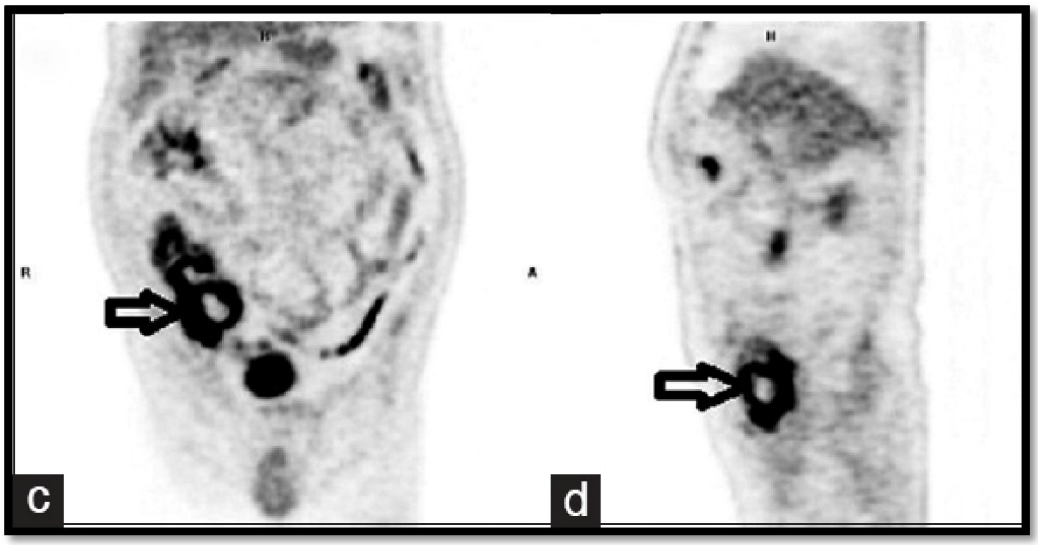


Figure 9.3. Nuclear Imaging in acute appendicitis

- **DIAGNOSTIC LAPAROSCOPY-** This is especially useful in equivocal cases. Paterson Brown et al, in a study found that diagnostic laparoscopy reduced the number of unnecessary appendicectomies significantly, especially in female patients.[36](Fig. 9.4)

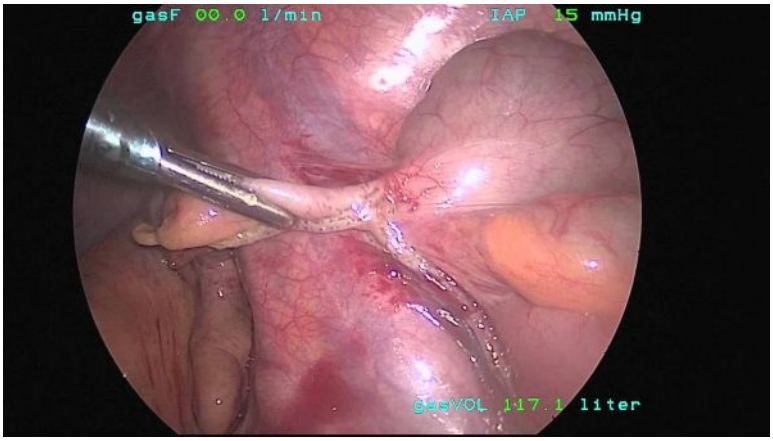


Figure 9.4. D-lap in acute appendicitis

CLINICAL SCORING SYSTEMS[34]

As discussed before, even with the advances in medicine and imaging techniques, appendicitis is one condition which still relies upon clinical examination as a main resort of diagnosis. To aid this, over the years several scoring systems have been developed taking into account various symptoms, signs and some basic laboratory investigations. Many studies have been done worldwide to check the sensitivity and specificity of each of these clinical scoring systems in the diagnosis of acute appendicitis. Though the most famous one is the Alvarado scoring system, there is no one universally accepted scoring system used for diagnosis so far. Some of the scoring systems are described below.

1. **ALVARADO SCORING SYSTEM[35]**

FEATURE	**SCORE**
Migratory pain	1
Anorexia	1
Nausea	1
Tenderness in RIF	2
Rebound tenderness	1
Elevated temperature	1
Leucocytosis	2
Shift of WBC count to left	1
TOTAL	**10**

Score <5 – Appendicitis unlikely

5-6 – Appendicitis possible

7-8 – Appendicitis likely

>8 – Appendicitis highly likely

2. MODIFIED ALVARADO SCORING SYSTEM (MASS)[36]

SYMPTOMS	**SCORE**
Migratory RIF pain	1
Nausea/Vomiting	1
Anorexia	1
SIGNS	
Tenderness in RIF	2
Rebound tenderness in RIF	1
Elevated temperature	1
LABORATORY FINDINGS	
Leucocytosis	2
TOTAL	**9**

Score <5 – Unlikely to be appendicitis

5-6 – Low Probability to be appendicitis

6-7 – High Probability to be appendicitis

>8 – Definite appendicitis

3. RIPASA SCORING SYSTEM[5]

PATIENT'S DEMOGRAPHIC	**SCORE**
Female	0.5
Male	1.0
Age< 39.9 years	1.0
Age> 40 years	0.5
SYMPTOMS	
RIF pain	0.5
Pain migration to RIF	0.5
Anorexia	1.0
Nausea & vomiting	1.0
Duration of symptoms < 48 hrs	1.0
Duration of symptoms > 48 hrs	0.5
SIGNS	
RIF tenderness	1.0
Guarding	2.0
Rebound tenderness	1.0
Rovsing's sign	2.0
Fever>37^0C , <39^0C	1.0
INVESTIGATIONS	
Raised WBC count	1.0
Negative urinalysis	1.0
ADDITIONAL SCORES	
Foreign NRIC	1.0

Score <5 – Unlikely to be appendicitis

5-7.5 – Low Probability to be appendicitis

7.5-12 – High Probability to be appendicitis

>12 – Definite appendicitis

4. PAEDIATRIC APPENDICITIS SCORE[37]

SYMPTOM/SIGN	SCORE
Anorexia	1
Pyrexia	1
Nausea/Vomiting	1
Migration of pain	1
Raised WBC count	1
Raised neutrophil count	1
RIF tenderness	2
Cough/percussion/hopping tenderness	2

Score <5 – Appendicitis unlikely

5 – Appendicitis possible

≥6 – Appendicitis likely

5. TZANAKI SCORING[38]

FEATURE	SCORE
Presence of right lower abdominal tenderness	4
Rebound tenderness	3
Lab findings- WBC>12,000 cells/cumm	2
USG- positive findings	6
TOTAL	**15**

Score <8 – Appendicitis unlikely

>8 – Appendicitis likely

6. LOW RISK FOR APPENDICITIS SCORE (KHARBANDA)[39]

DIAGNOSTIC FEATURE	SCORE
Absolute neutrophil count >6.75	6
Rebound pain/pain with percussion	2
Unable to walk/walks with limp	1
Nausea	2
H/o migratory pain	1
H/o focal RLQ pain	2
TOTAL	**14**

Score <5 – Low risk for appendicitis

>5 – High risk for appendicitis

7. LINTULA SCORE[40]

DIAGNOSTIC CRITERIA	RESPONSE	SCORE
Gender	Male	2
	Female	0
Intensity of pain	Severe	2
	Mild to moderate	0
Relocation of pain	Yes	4
	No	0
Vomiting	Yes	2
	No	0
Pain in RLQ	Yes	4
	No	0
Fever >37.5^{0}C	Yes	3
	No	0
Guarding	Yes	4
	No	0
Bowel sounds	Absent/tinkling/high pitched	4
	Normal	0
Rebound tenderness	Yes	7
	No	0
TOTAL SCORE		**32**

Score >21 – High risk for appendicitis

15-21 – Moderate risk for appendicitis

<15 – Low risk for appendicitis

8. ESKELINEN SCORE[41]

DIAGNOSTIC CRITERIA	RESPONSE
Tenderness in RLQ	Yes-2, No-1
Rigidity	Yes-2, No-1
WBC> 10,000	Yes-2, No-1
Rebound tenderness	Yes-2, No-1
Pain in RLQ at presentation	Yes-2, No-1
Duration of pain > 48 hours	Yes-2, No-1

Final scoring is done with a computer program using complex calculations.

9. OHMANN SCORE[43]

DIAGNOSTIC CRITERIA	SCORE
Tenderness in RLQ	4.5
Rebound tenderness	2.5
No micturition difficulties	2.0
Steady pain	2.0
WBC>10	1.5
Age<50	1.5
Relocation of pain to RLQ	1.0
Rigidity	1.0
TOTAL	**16**

Final scoring is done with a complex computer program.

10. FENYO-LINDBERG SCORE[42]

DIAGNOSTIC CRITERIA	RESPONSE	VALUE
Sex	Male	+8
	Female	-8
WBC	>14	+10
	9-13.9	+2
	<8.9	-15
Duration of pain (hrs)	<24	+3
	24-48	0
	>48	-12
Progression of pain	Yes	+3
	No	-4
Relocation of pain	Yes	+7
	No	-9
Vomiting	Yes	+7
	No	-5
Aggravation by coughing	Yes	+4
	No	-11
Rebound tenderness	Yes	+5
	No	-10
Rigidity	Yes	+15
	No	-4
Tenderness outside RLQ	Yes	-6
	No	+4
Constant		-10

Final scoring is done with a complex computer program.

11. CHRISTIAN SCORE[44]

DIAGNOSTIC CRITERIA – 1 point for each
Abdominal pain on history, occurring within 48 hours of presentation
Vomiting- 1 or more episode
RLQ tenderness on examination
Low grade fever – defined as <= 38.8 C
Polymorphonuclear leucocytosis – defined as WBC > 10,000 AND neutrophils > 75%

Score >4 – Surgery

≤3 - Observation

TREATMENT[1,9,10,13]:

The treatment options available for appendicitis vary depending upon a number of factors such as time of presentation, clinical picture, obstructive or non-obstructive pathology amongst others. The patient can be conservatively managed in case of non-obstructive pathology, resolving symptoms. Treatment is by Fluid management, IV antibiotics and supportive therapy. Patient will be on close follow up and in case of non-resolution or recurrence, may be taken up for surgery (either emergency or interval). The surgical management of an uncomplicated appendicitis is Appendicectomy, which can be done by various techniques ranging from open surgery, conventional laparoscopy, single incision laparoscopic surgery, robotic surgery to NOTES (natural orifice trans-endoluminal surgery). Cases of appendicular mass are

initially managed conservatively by Ochsner Sherren regimen, with IV fluids, IV antibiotics and close follow up of the size of the mass and patient may be taken up for an interval appendicectomy. The management of an appendicular abscess is by drainage, as in any other abscess in the body.

No matter what the final path of management, the importance of hydration and IV antibiotics cannot be stressed upon enough.

CLINICAL SCORING SYSTEMS

What are Clinical Scoring Systems?[34]

Clinical Prediction Rules (CPR) are defined as decision-making tools, which include 3 or more variables obtained from the history, physical examination or basic diagnostic tests in order to assist the clinician in decision making.[45]

In recent times, as there is a quest to improve diagnostic accuracy, there has been an increase in the use of CPRs. These use specific criteria in order to establish probabilities of outcomes or to aid in assisting management decisions. There are 3 types of CPRs[46]-

- **Diagnostic CPRs** - factors related to arriving at a clinical diagnosis
- **Prognostic CPRs** - for predicting outcomes
- **Prescriptive CPRs** - Provide recommendations for clinical intervention

The format of a CPR can be of two types.

1. Some require fulfilment of a complete set of criteria in order to direct management.

2. Some assign values to weighted criteria, the summation of which provides a score.

The second type, known as Clinical Scoring Systems (CSSs), have different types too.

1. **Dichotomous type**- utilizing a cut-off value above which an action is recommended or an outcome is expected. For example, surgical intervention may be recommended for a certain validated score over 6.

2. **Continuous type**- to provide graded risk stratification. A simple example may stratify a patient to low risk of a disease process for scores of 1-2, moderate risk for scores of 3-5 and high risk for scores of 6-7.

While many CSSs exist, not all have been appropriately developed or evaluated. In the process of evaluation, one must consider several factors including

- internal validity
- accuracy

- external validity
- sensibility
- potential impact

Why use Clinical Scoring Systems?

Problems still remained in the early diagnosis of appendicitis, as no one investigation was gold standard for it. Hence it was understood that no imaging is superior to a good clinical examination and a clinical diagnosis when it came to appendicitis. To aid the clinician in the diagnosis for a suspected case of appendicitis, many clinical scoring systems have been developed over the past 3 decades.

The basis of all medical diagnoses and decisions depend upon the ability of a clinician to assess the potential risk and benefit, along with sound clinical knowledge. This helps in making wise, educated decisions, which is the cornerstone of good medical practice. Practice variation can result in patient outcome differences, but standardization of practice based on the best evidence can result in improved care. Numerous studies have demonstrated the efficacy of Evidence Based Clinical Algorithms (EBCA) such as pathways and protocols in reducing delays in time-sensitive medication administration, deciding on surgery, and reducing mortality[47]. Integrating CSSs into EBCA is key to standardizing patient care and this will help in global and individual health outcomes.

ALVARADO SCORING AND MODIFIED ALVARADO SCORING SYSTEMS (MASS)-

In 1986, Alvarado published what is now one of the most well-known and studied appendicitis scores[35]. A retrospective study was done on 305 patients admitted for suspected appendicitis. Clinical and laboratory findings were compared in relation to pathologically proven acute appendicitis. 277 patients were eligible for analysis. Eight criteria were chosen for inclusion in the diagnostic score. As Right Lower Quadrant (RLQ) Pain and Left Shift were found to be the most prevalent, they received 2 points each, while each of the remaining criteria were given 1 point. This initial study included an age range of 4 to 80 years (mean 25.3). An Alvarado Score of ≥7 was considered high risk for appendicitis. It was found to have a sensitivity of 81% and a specificity of 74%.

Since then, numerous studies have been done world across to check the Alvarado scoring in various populations.

Bond et al prospectively studied 187 children aged 2 – 17 years with suspected appendicitis. They used Alvarado's cut-off score and found a sensitivity and specificity of 90% and 72% respectively, with a negative appendectomy rate of 17%. Lower cut-off scores (5 or 6) demonstrated improved sensitivity, but corresponding reductions in specificity, as expected.[48]

Hsiao et al conducted a retrospective study and confirmed Alvarado's data showing that RLQ tenderness and a left shift were the most prevalent signs in those with pathologically proven appendicitis. Patients with Alvarado Scores ≥7 were statistically more likely to have appendicitis than controls. Overall sensitivity and specificity for an Alvarado Score >=7 were 60% and 61% respectively.[49]

Rezak et al, in their retrospective study, founda higher sensitivity and specificity- 92% and 82% respectively. This study also suggested that a 27% reduction in CT scanning would have occurred, if patients with scores >7 had been managed directly by appendectomy without CT evaluation.[50]

In a mixed pediatric-adult population, Owen et al prospectively evaluated 215 patients and found the sensitivity and specificity were 93% and 81%.[51]

Shreef et al recently in 2010, performed a dual-centre prospective study, reviewing 350 patients. Interestingly, their reported statistical analysis was based on an Alvarado threshold of 6, and was based upon 2 different outcomes; 1) performance of appendectomy and 2) histology. Using the standard threshold of 7 and including all comers related to histologic diagnosis, the sensitivity and specificity were 86% and 83% respectively.[52]

Several attempts have been made to modify the Alvarado Score to improve its accuracy.

Macklin et al sought to simplify the Alvarado Score by eliminating the criteria for left shift (Modified Score total 9), as done by Kalan in a mixed adult/paediatric study. Children aged 4-14 years were enrolled, demonstrating sensitivity and specificity of 76.3% and 78.8% respectively using a cut-off score of 7 or higher to predict histological appendicitis. Kalan's study was limited to 11 children, all of which had modified Alvarado Scores ≥7 and corresponding appendicitis. Obviously these numbers are too small to draw any conclusions.(53)

Sooriakumaran et al further modified the score by decreasing the value of leukocytosis, to make a total score of 8. This score was then compared to clinical assessment by Emergency Physicians, and found wanting. However, one must be cautious, as only 3 children were included, and due to the change in total score, the threshold value was tested at 5.(54)

Significant changes to the Alvarado Score were suggested by Impellizzeri et al. who studied 156 patients, replacing anorexia with an elevated fibrinogen level (>400mg/dL), changing migration of pain to length of pain (although not defined), combining RLQ pain and rebound into one criteria, and decreasing the temperature cut-off to 37 C. Of note, the diagnosis of appendicitis was made on surgical report, not pathologic diagnosis. The authors suggest the above modifications would have decreased admission rates by 15%.(55)

OTHER SCORING SYSTEMS

Madan Samuel introduced the **Paediatric Appendicitis Score (PAS)** in 2002.Evaluating 1170 children with suspected appendicitis, Samuel compared historical, clinical and laboratory features in children with appendicitis (n=734) and those without appendicitis (n=436). 8 variables were included in a diagnostic model out of 10 points, with greater weight attributed to RLQ pain and rebound tenderness. Samuel concludes that a score of 6 or greater shows a high probability of acute appendicitis.[37]

Increased concerns related to radiation exposure from imaging studies have put pressure on clinicians to accurately decide which children with abdominal pain should be admitted and observed or discharged without a CT evaluation. **Kharbanda** et al derived and validated a score to do that**- Low risk appendicitis score**. Kharbanda et al prospectively enrolled 767 patients with suspected appendicitis who were evaluated by a surgeon. Using 6 weighted predictors of appendicitis determined for a total score of 14, patients with a score of <=5 were highly unlikely to have appendicitis (sensitivity 99%, NPV 98%).[39]

The **Lintula Score** relies on clinical data alone. There are no laboratory results required. Lintula et al first prospectively evaluated 35 clinical variables to derive a score in 127 patients. The Lintula Score has a

maximum value of 32. A high risk threshold was established at >=21, while low risk was ≤15.[40]

The **Eskelinen Score** is relatively complex to perform, (requiring factor multiplication) and was originally designed for use within a computer program.[41]

The **Fenyo-Lindberg Score**appears to be one of the most complex, incorporating criteria with multiple levels of response that both add to and subtract from the total score. In 1987, Fenyo prospectively evaluated 259 adult patients with suspected appendicitis. The resulting score was further validated in 830 patients, of which 256 had proven appendicitis. Sensitivity, Specificity, PPV and NPV were 90%, 91%, 83% and 95% respectively.[42]

In 1999, Ohmann prospectively validated his own score in a multi-centre, multi-phase trial. Subjects evaluated during phase 1 (n=870) received surgical intervention based on surgeon assessment, while those in phase 2 (n= 614) received computer-assisted diagnostic support using the **Ohmann Score**. The authors found a statistically significant improvement in specificity, PPV and accuracy in the phase 2 Score group, along with a decrease in the number of delayed diagnoses, which was defined as appendectomy on the second day after admission or later.[43]

Probably the simplest of the group, the **Christian Score** uses a mere 5 criteria. The case group of 58 subjects with suspected appendectomy had surgical intervention if ≥4 criteria were met. Fifty-nine appendectomy controls had intervention based solely on surgical staff assessment. Ages ranged from 7 to 56 years. The negative appendectomy rate was significantly less in the Score group than that of the control.[44]

RIPASA SCORING

What is probably the newest member to the group of appendicitis scores is the RIPASA Score, named after its hospital of origin in Brunei. A mixed population of 400 adults and children who had an appendectomy were retrospectively identified, the records of 312 were used to derive the score. Individual criteria were weighted (0.5, 1, 2) based on probabilities and a panel of staff surgeons. The resulting maximal RIPASA score is 16 - a threshold of 7.5 proving a sensitivity of 88% and specificity of 67%. PPV and NPV were 93% and 53%, while accuracy was 81%. Using the score, an absolute reduction in negative appendectomies of 9% would have occurred.[5,6]

Chong et al continued to evaluate their new score by prospectively enrolling 200 adults and children in a comparison of the RIPASA and Alvarado Scores. In this group of patients, the RIPASA was statistically superior to the Alvarado Score in Sensitivity (98% vs. 68%), NPV (97% vs.

71%) and accuracy (92% vs. 87%). Specificity, PPV and negative appendectomy rates were similar between the 2 scores.[56]

Several other CSSs have been developed for patients with suspected appendicitis, but do not appear to have been formally evaluated in detail. Some of these include the Teicher Score, Arnbjornsson Score, Izbicki Score, and DeDombal Score.[34]

Aims and objectives

AIMS AND OBJECTIVES

To assess the RIPASA scoring system and the Modified Alvarado Scoring System (MASS) for the diagnosis of Acute Appendicitis, and compare them with respect to

- Sensitivity
- Specificity
- Positive Predictive Value (PPV)
- Negative Predictive Value (NPV)
- Diagnostic Accuracy

Materials and methods

MATERIALS & METHODS

After consultation with the statistician, the sample size was calculated with the following formula and set as 180.

$$n = \frac{t^2 \times p(1-p)}{m^2}$$

INCLUSION CRITERIA:

- All patients presenting with Right Iliac Fossa (RIF) pain

EXCLUSION CRITERIA:

- Critically ill patients
- Pregnancy
- K/c/o Tuberculosis
- Age group <5 and >50 years

This is a cross-sectional, comparative study conducted at ESIC Medical College & PGIMSR, K.K.Nagar, Chennai-78 for a period of 1 ½ years, from November 2013 to May 2015. The first 180 patients who presented to the Surgery OPD and Emergency Department with RIF pain were included in the study. Relevant history, examination and laboratory investigations done. Patients were scored according to both Modified Alvarado Scoring System (MASS) and RIPASA Scoring, and both were documented in the proforma. In both groups after final scoring, patients were categorized into 4 groups.

CATEGORY	RIPASA	MASS
D (Definite)	>12	>8
HP (High Probability)	7.5-12	6-7
LP (Low Probability)	5-7.5	5-6
U (Unlikely)	<5	<5

After this, the management of the patient was carried out according to the RIPASA Scoring system.

- Patients who fell under HP/D category, were taken up for surgery immediately.
- Patients who fell under LP category were subjected to CT scanning for diagnosis.
- Patients who fell under U category were worked up for other causes of pain abdomen, other than appendicitis, by means of imaging and other appropriate laboratory studies.

Conservatively managed patients were discharged and followed up in the OPD, while for the patients who were operated upon directly, diagnosis was confirmed by intraoperative findings and HPE report. With the final diagnosis confirmation got from either CT scan or Intra-operative finding, or Post-operative HPE report, an analysis was done comparing both RIPASA and MASS.

Results

RESULTS

In the present study, patients of age group 5-50 years were included, with the mean age being 28+/- 11.6 years. The maximum number of patients belonged to the 2nd and 3rd decades (Fig.10.1). 31% of the patients belonged to the 25-35 years age group, followed by 26% belonging to 15-25 years age group, while only 9% belonged to the age group above 45 years. Both sexes were affected with a slight male preponderance (57% males and 43% females).(Fig.10.2)

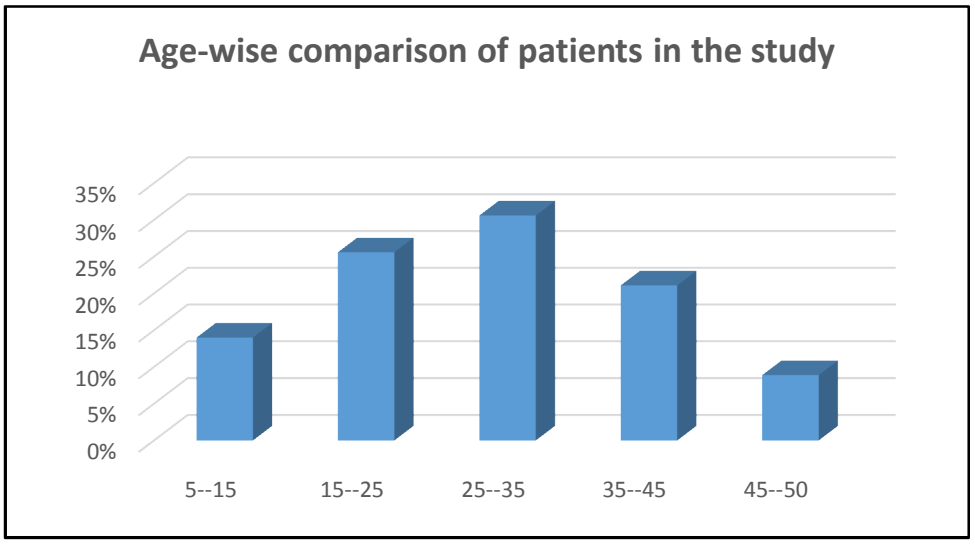


Figure 10.1. Age-wise distribution in the study

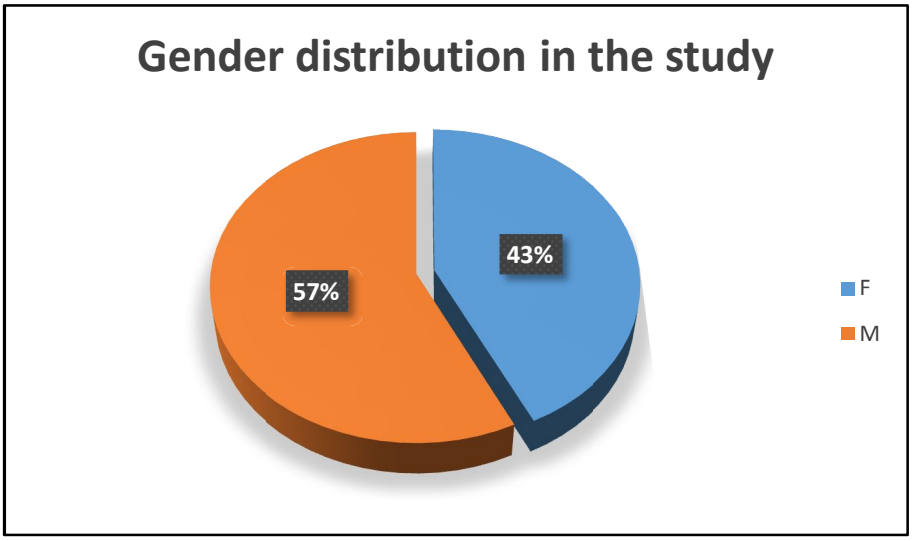


Figure 90.2. Gender distribution in the study

As planned, RIPASA and MASS was applied to all the 180 patients who presented with RIF pain.

Analysis of RIPASA SCORING(Fig. 10.3)-

82% belonged to the age group below 40 years, and 18% above. Gender differentiation was 57% male and 43% female. 30% presented within 48 hours of onset of symptoms and 70% after. 100% of the patients had RIF pain, as was the inclusion criteria of the study. 81% of them had RIF tenderness, 57% had a negative urinalysis, 53% had fever and 47% had a raised TC. 48% of the patients had nausea or vomiting.

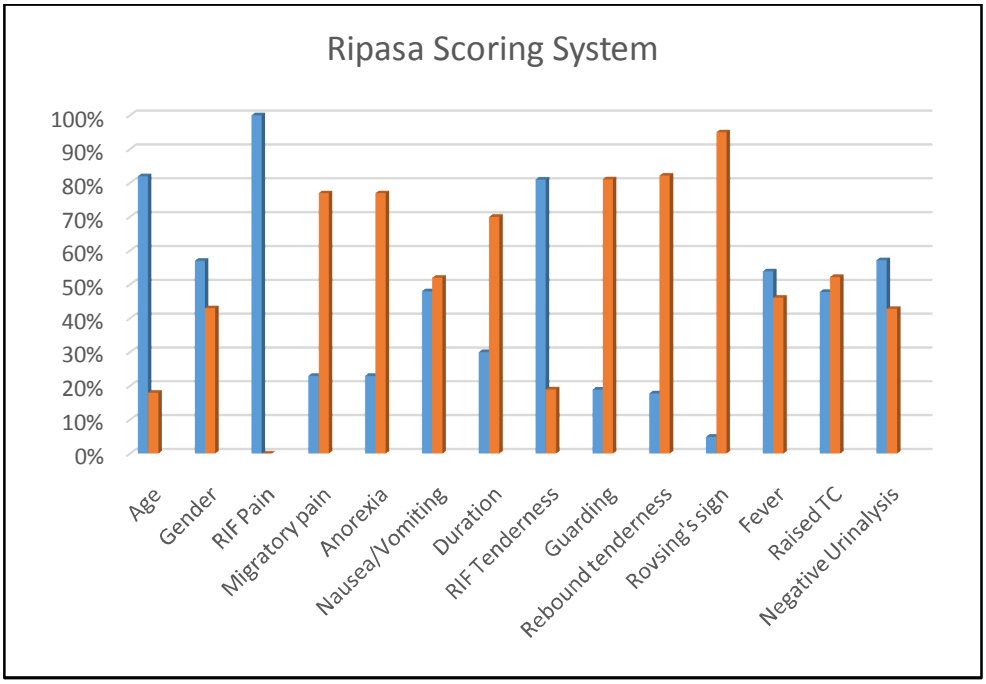


Figure 10.3. Parameters of RIPASA score in the sample of present study

- *Positive score*
- *Negative Score*

Finally, out of the total score, the patients were categorized under 4 categories. 4% of the patients had a score of >12 and were categorized as D, 21% with a score of 7.5-12 fell under the category HP, 39% had a score of 5-7.5 and were categorized as LP and 36% with a score <5 were termed U. (Fig.10.4)

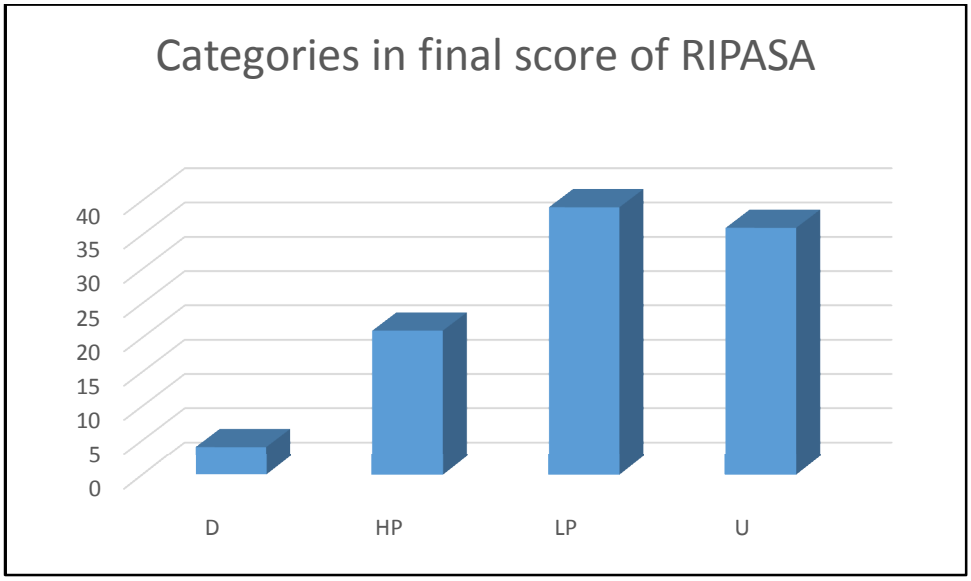


Figure 10.4. Categories in final score of RIPASA
D- Definite, HP- High Probability, LP- Low Probability, U- Unlikely

For all the 180 patients, MASS was also applied.

Analysis of MASS(Fig.10.5)-

81%,53%,47% and 48% had RIF tenderness, fever, raised TC and nausea/vomiting respectively. 23% patients had migratory pain and anorexia and about 17% had rebound tenderness.

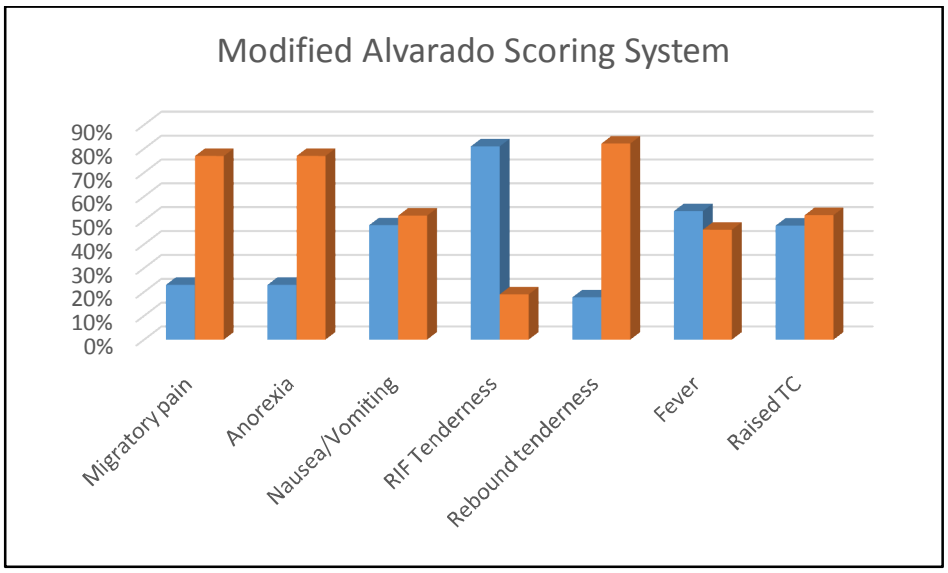


Figure 10.5. Parameters of MASS in the sample of present study

- *Positive score*
- *Negative Score*

With the final score, patients were classified into 4 categories. 12% with score >8 fell under D,16% with 6-7 were under HP,19% with score 5-6 were under LP, and 53% with score <5 were under U. (Fig. 10.6)

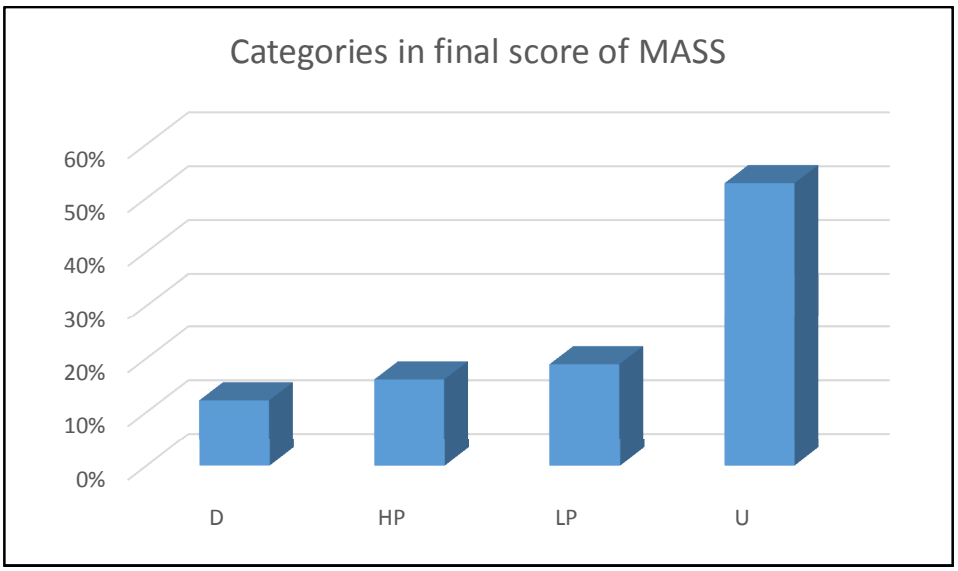


Figure 10.6. Categories in final score of MASS
D- Definite, HP- High Probability, LP- Low Probability, U- Unlikely

As decided in the protocol, plan of management was carried out as per RIPASA score. Patients with U were subjected to USG scanning and other investigations to find out cause for pain abdomen and were either conservatively managed or referred to other specialist departments based on the diagnosis. Patients with LP were subjected to CECT Abdomen since it has a high sensitivity and specificity for diagnosis of appendicitis.[57] The findings in the CT scan among the LP patients were as follows- Among the 71 patients who fell under LP category of RIPASA, 59% were diagnosed with appendicitis (A) and 41% had other non-appendiceal (NA) causes of pain abdomen. (Fig. 10.7)

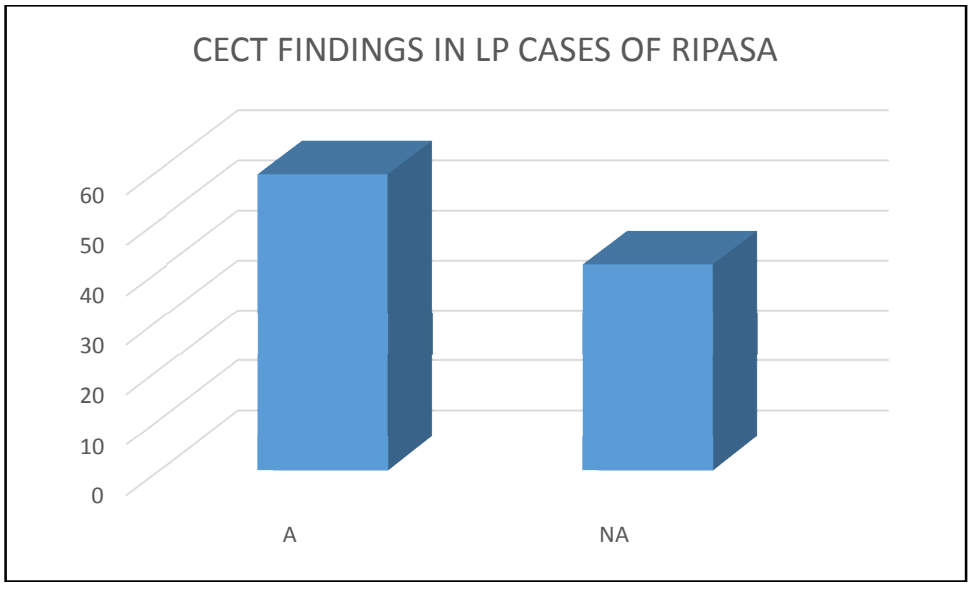


Figure 10.7. CECT results in LP cases of RIPASA
A-Appendicitis, NA-Non-Appendiceal cause

The total number of cases that underwent surgery (S), conservative management(C) and referrals (R) according to their categories are as follows-

Among the 44 cases that fell under HP/D, 43 were operated upon with a diagnosis of appendicitis, among which 2 cases turned out to be non-appendiceal causes- one was omental torsion, for which omentectomy and appendicectomy was done (Case No.60), and the other was a case of Meckel's diverticulitis for which Resection Anastomosis and appendicectomy was done (Case No.165). 1 case had a polycystic ovary along with appendicitis, for which OBG consult was sought and was opined to manage conservatively for the PCOD and appendicectomy was carried out (Case No. 148). 1 case was intra-operatively found to be right ovarian torsion (appendix was normal), and right oophorectomy was carried out (Case No. 69).

Among the 71 cases that fell under LP, CECT abdomen was done for all cases. 42 were diagnosed with appendicitis. Out of these 42 cases, 25 cases underwent appendicectomy. 5 cases diagnosed to have appendicular mass were initially managed conservatively according to Ochsner Sherren regimen and taken up for interval appendicectomy after 6 weeks (Cases No. 107, 128, 145, 170, 176). 17 cases with proven non-obstructive pathology on CECT, were chosen to be managed conservatively due to delayed presentation (>72 hours) and resolving symptoms. They were followed up on OPD basis regularly up to 6 weeks period, among which 14 cases did not have recurrence, 2 cases were lost to follow up and 1 case had a recurrence and underwent interval appendicectomy (Case No. 134).

Among the 65 cases under U, 48 were managed conservatively for various reasons ranging from urological causes like ureteric calculus and cystitis, to gastrointestinal causes like colitis. 17 cases were referred to OBG department for gynaecological pathologies. (Fig. 10.8)

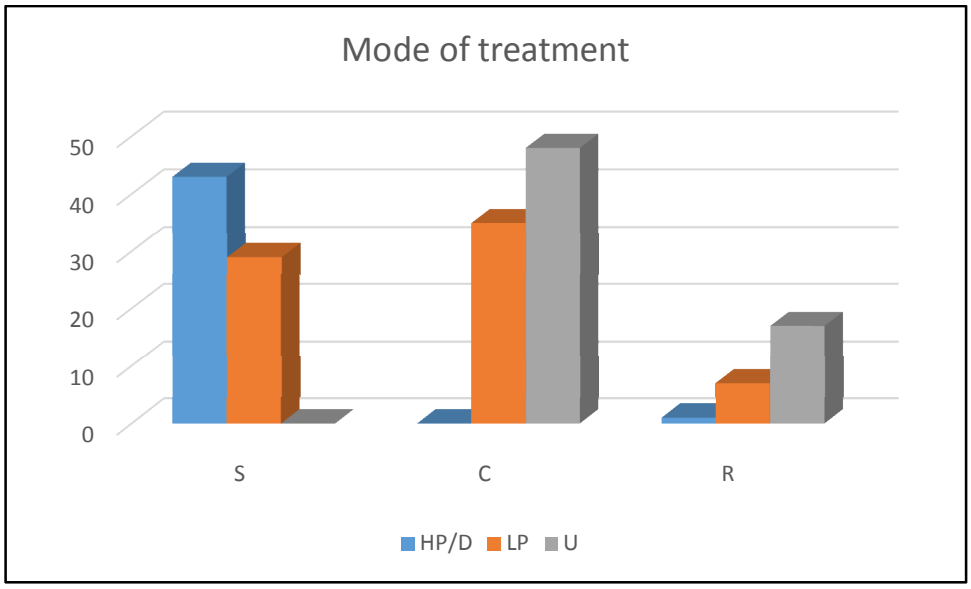


Figure 10.8. Final mode of treatment in the sample in the study
D- Definite, HP- High Probability, LP- Low Probability, U- Unlikely
S-Surgery, C-Conservative Management, R-Referral to specialist department

Final diagnosis was confirmed with CECT, intra-operative findings and post-operative histopathology report. Among the 180 cases in the study, 46% had a final diagnosis of appendicitis and the remaining 54% had varied causes of pain abdomen – urological, gastrointestinal, gynaecological, and non-specific. (Fig. 10.9)

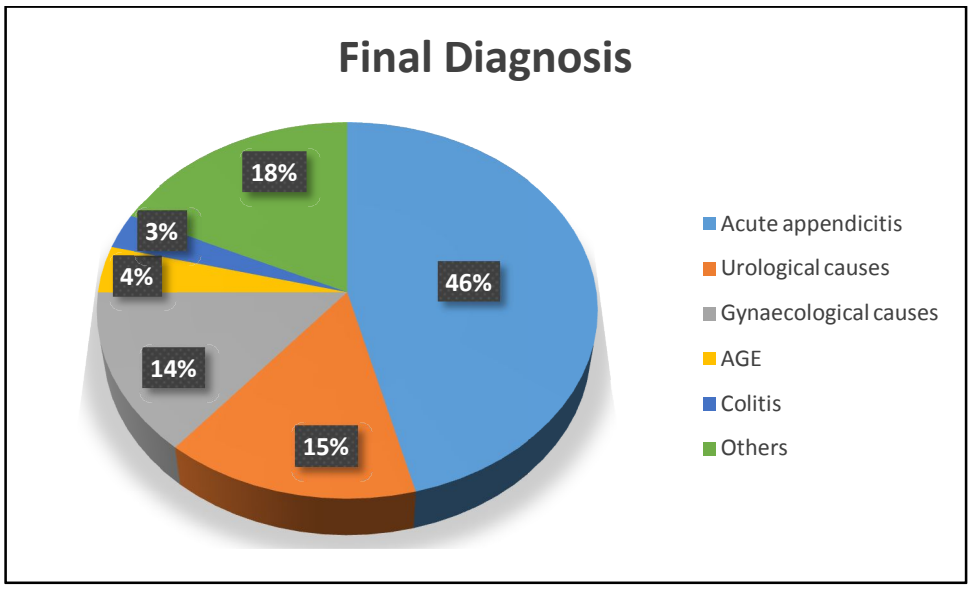


Figure 10.9. Proportion of Final diagnoses in present study

To further compare RIPASA and MASS, category-wise analysis was done among the 46% of finally diagnosed appendicitis cases.

In retrospective comparison between final diagnosis of appendicitis and HP/D categories of RIPASA and MASS, it was seen that 93% of HP/D among RIPASA were appendicitis (Fig. 10.10), whereas only 81% of HP/D categories under MASS were appendicitis. (Fig. 10.11)

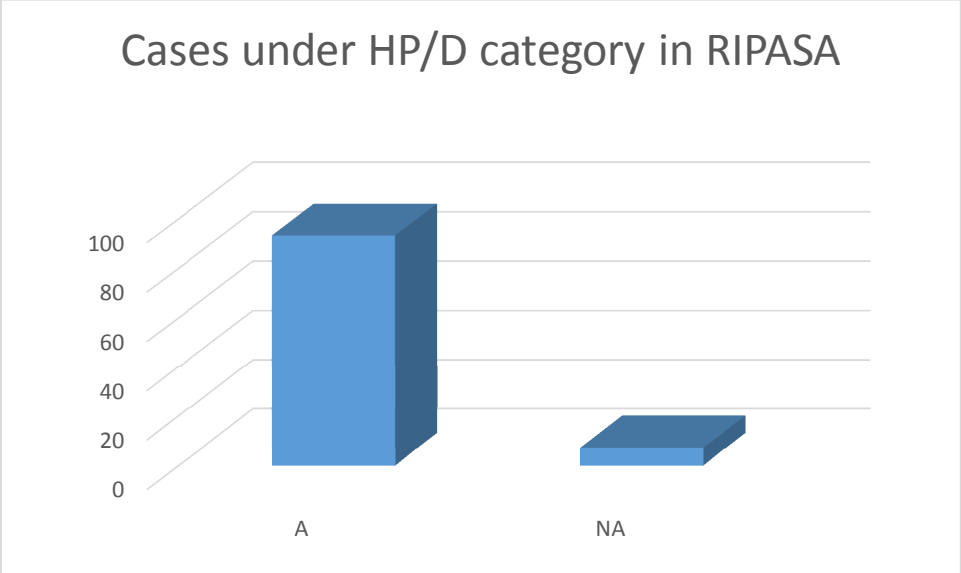


Figure 10.10. Cases under HP/D category in RIPASA
A-Appendicitis, NA-Non-Appendiceal cause

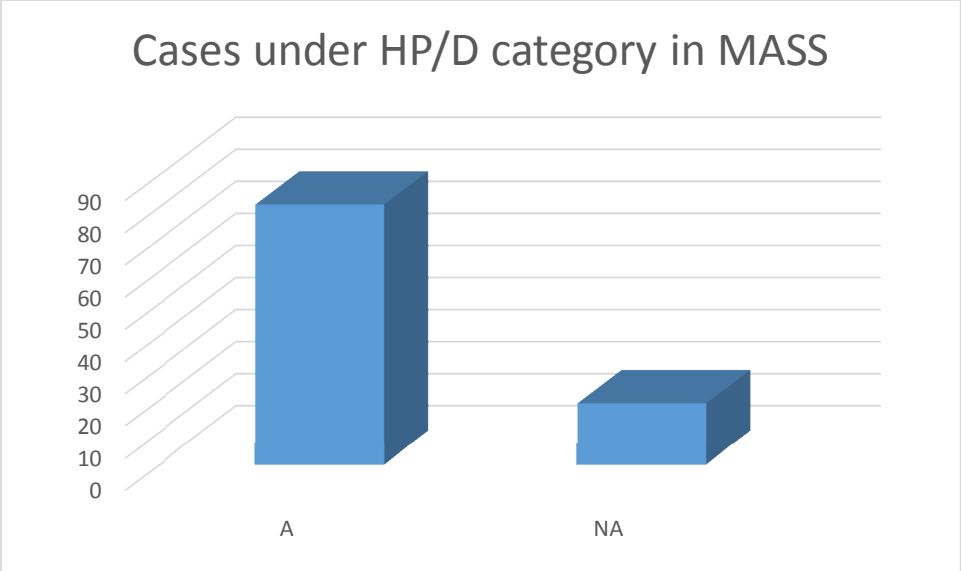


Figure 10.1110. Cases under HP/D category in MASS
A-Appendicitis, NA-Non-Appendiceal cause

Under LP category, in RIPASA only 58% were appendicitis (Fig. 10.12) whereas in MASS, 80% were appendicitis (Fig. 10.13).

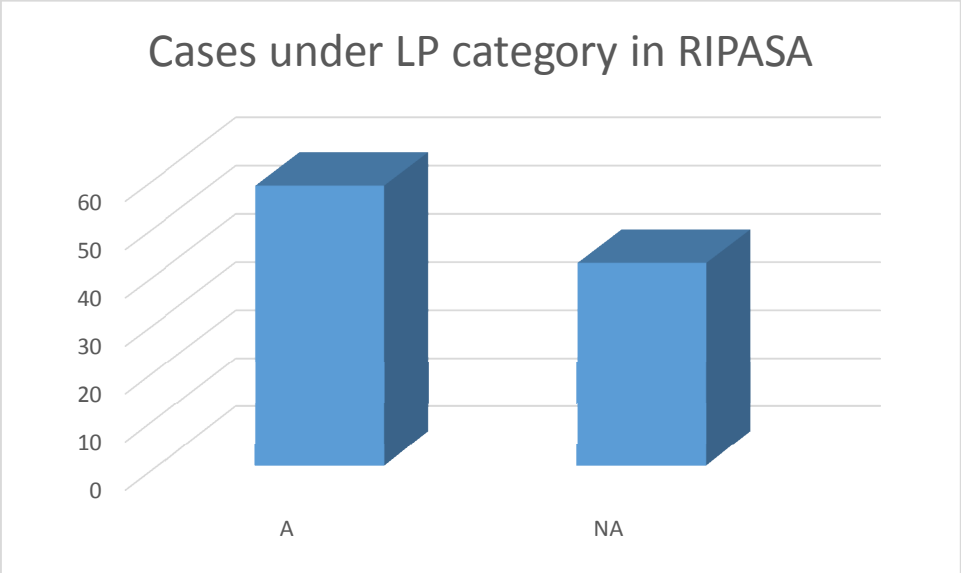


Figure 10.12. Cases under LP category in RIPASA

A-Appendicitis, NA-Non-Appendiceal cause

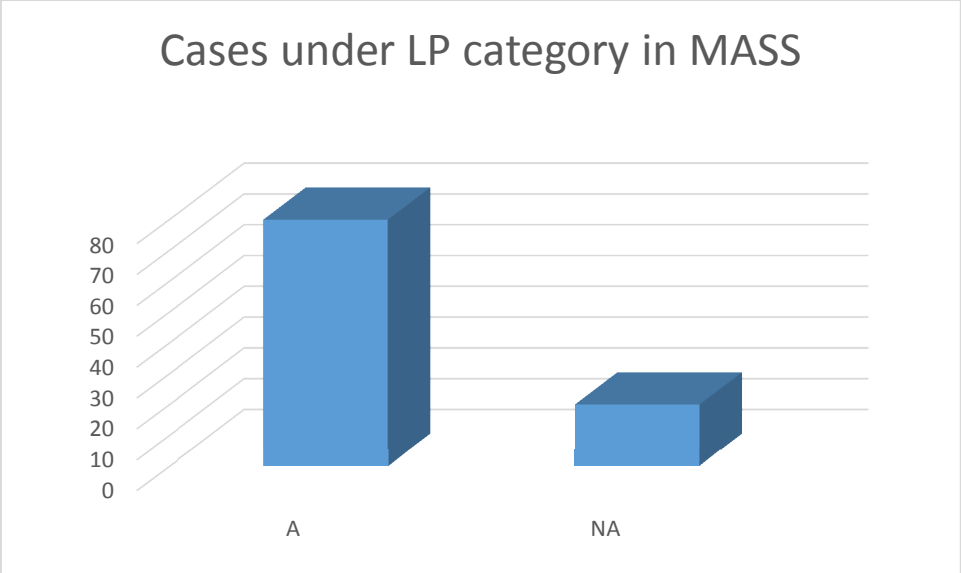


Figure 10.13. Cases under LP category in MASS

A-Appendicitis, NA-Non-Appendiceal cause

Under the U category, RIPASA had 0 appendicitis cases, i.e. it proved that 100% of the cases were unlikely (Fig. 10.14), whereas in MASS, 16% cases were found to have appendicitis (Fig. 10.15).

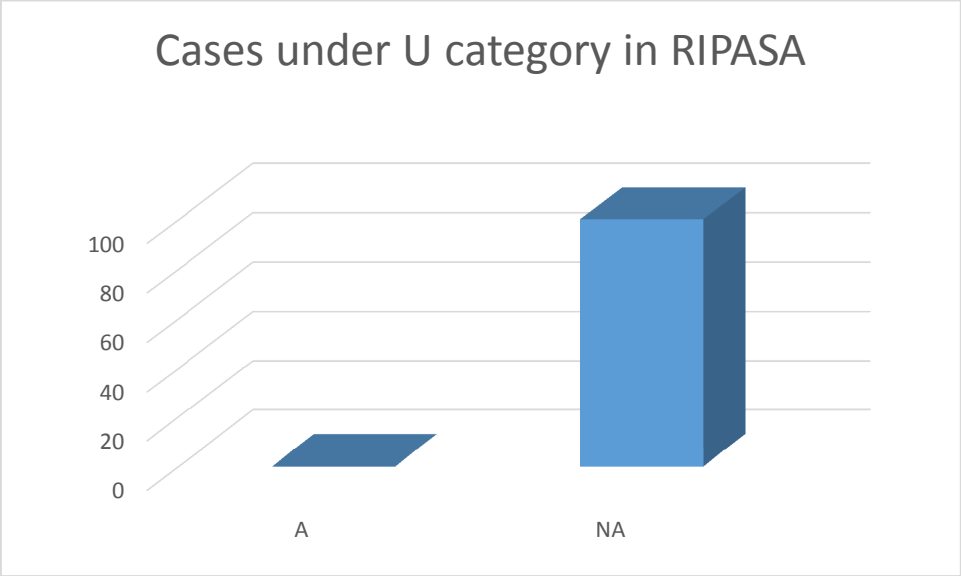


Figure 10.14. Cases under U category in RIPASA
A-Appendicitis, NA-Non-Appendiceal cause

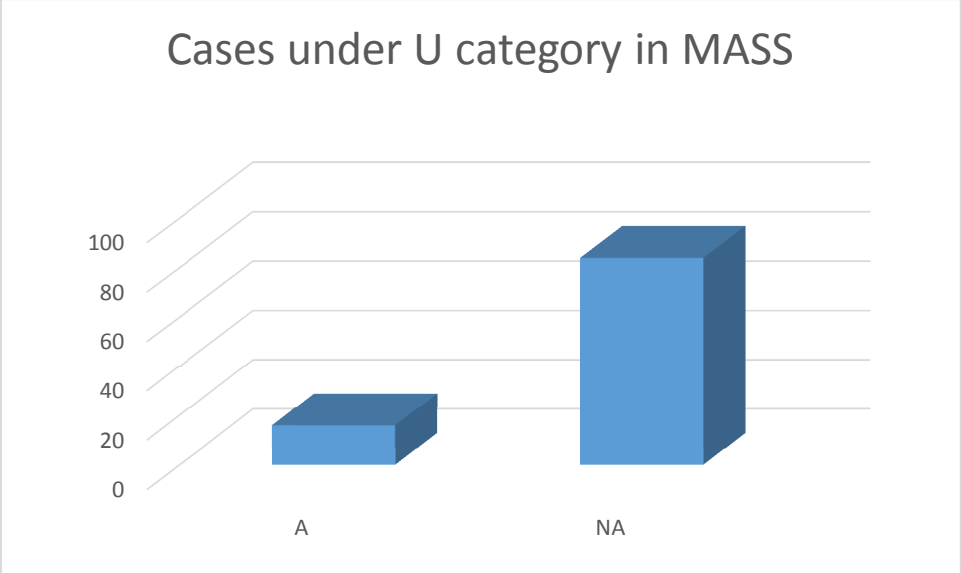


Figure 10.15. Cases under U category in MASS
A-Appendicitis, NA-Non-Appendiceal cause

Statistical analysis was done with the help of OpenEpi, Version 2 and SPSS software Version 16. Results were as follows-

RIPASA SCORING SYSTEM –

Table 1. Diagnostic evaluation of RIPASA with Final diagnosis

RIPASA	Final Diagnosis- A	Final Diagnosis - NA	Total
Score Positive	41	3	44
Score Negative	42	94	136
Total	83	97	180

Final Diagnosis- A: Appendicitis as confirmed by CECT/Intraop findings/Postop HPE report
Final Diagnosis- NA: Non-Appendiceal cause as confirmed by CECT/Intraop findings/Postop HPE report
Score Positive- Score>7.5, under HP/D categories.
Score Negative- Score<7.5, under LP & U categories.

Table 2. Statistical Analysis of RIPASA

Parameter	Estimate	Lower - Upper 95% CIs
RIPASA		
Sensitivity	49.40%	(38.91, 59.94[1])
Specificity	96.91%	(91.3, 98.94[1])
Positive Predictive Value	93.18%	(81.77, 97.65[1])
Negative Predictive Value	69.12%	(60.92, 76.27[1])
Diagnostic Accuracy	75%	(68.2, 80.76[1])
Method:Wilson Score		

Interpretation: In this study, Sensitivity was 49.4% with 95% confidence interval (38.91, 59.94), and specificity was 96.91% with 95% confidence interval (91.3, 98.94). Positive Predictive Value (PPV) showed an estimate 93.18% with 95% confidence interval (81.77, 97.65). Diagnostic accuracy of RIPASA is also high (75%).

MODIFIED ALVARADO SCORING SYSTEM –

Table 3. Diagnostic evaluation of MASS with Final diagnosis

MASS	Final Diagnosis- A	Final Diagnosis - NA	Total
Score Positive	41	10	51
Score Negative	42	87	129
Total	83	97	180

Final Diagnosis- A: Appendicitis as confirmed by CECT/Intraop findings/Postop HPE report
Final Diagnosis- NA: Non-Appendiceal cause as confirmed by CECT/Intraop findings/Postop HPE report
Score Positive- Score>6, under HP/D categories.
Score Negative- Score<6, under LP & U categories.

Table 4. Statistical analysis of MASS

Parameter MASS	Estimate	Lower - Upper 95% CIs
Sensitivity	49.40%	(38.91, 59.94[1])
Specificity	89.69%	(82.05, 94.3[1])
Positive Predictive Value	80.39%	(67.54, 88.98[1])
Negative Predictive Value	67.44%	(58.95, 74.92[1])
Diagnostic Accuracy	71.11%	(64.1, 77.24[1])
Method:Wilson Score		

Interpretation: In this study, Sensitivity was 49.4% with 95% confidence interval (38.91, 59.94), and specificity was 89.69% with 95% confidence interval (82.05, 94.3). Positive Predictive Value (PPV) showed an estimate 80.39% with 95% confidence interval (67.54, 88.98). Diagnostic accuracy of MASS is 71.11%.

COMPARISON BETWEEN RIPASA AND MASS-

PARAMETER	RIPASA	MASS
Sensitivity	49.40%	49.40%
Specificity	96.91%	89.69%
Positive Predictive Value	93.18%	80.39%
Negative Predictive Value	69.12%	67.44%
Diagnostic Accuracy	75%	71.11%

SIGNIFICANCE

Sensitivity of both RIPASA and MASS are comparable, but there seems to be a definite upgrade in specificity, positive predictive value, and to a certain amount in diagnostic accuracy as well in RIPASA scoring over MASS.

Discussion

DISCUSSION

From the time the concept of clinical scoring systems have been introduced, multiple studies have been done in search of the most sensitive, specific and diagnostically accurate clinical score to aid in the diagnosis of acute appendicitis.

Since its introduction in 1986, Alvarado is one of the most well-known and studied scores for acute appendicitis[35]. Its modification MASS has been equally in common use. As this is the most popular and commonly used scoring system, we planned to compare the newer scoring system (RIPASA) with it, and study its efficacy in terms of sensitivity, specificity and diagnostic accuracy among other factors.

In the present study conducted on 180 patients (n=180), RIPASA and MASS were compared, and final diagnosis was analysed in relation toCECT/intra-operative findings/ post-operative HPE reports. It was found that both RIPASA and MASS had equal sensitivity (49.4%), but specificity was higher in RIPASA (96.9%) as compared to MASS (89%). Also the Positive predictive value of RIPASA (93%) was higher than MASS (80%). The negative predictive value of RIPASA and MASS were comparable (69% and 67% respectively). The diagnostic accuracy was also slightly higher in RIPASA than MASS (75% and 71% respectively).

Analysing both RIPASA and MASS, it was found that both RIPASA and MASS were easy to perform as they mainly relied upon clinical symptoms and signs, along with basic laboratory investigations, and they did not need elaborate investigations. As RIPASA had more number of parameters compared with MASS, subjectively it felt like it summarized the patient's clinical condition better. The time taken to apply the scores (both RIPASA and MASS) were minimal, and did not cause any undue delay in management.

Even though MASS is a routinely used scoring system for the diagnosis of acute appendicitis worldwide, it has found to be lacking in its sensitivity and specificity.

Bond et al prospectively studied 187 patients with suspected appendicitis and found Alvarado score to have a sensitivity and specificity of 90% and 72% respectively.[48]

Hsiao et al conducted a retrospective study and found sensitivity and specificity for an Alvarado Score ≥7 were 60% and 61% respectively.[49]

Rezak et al, in their retrospective study, founda higher sensitivity and specificity- 92% and 82% respectively. This study also suggestedthat if patients with scores >7 been managed directly by appendectomy without CT evaluation, this would have caused a 27% reduction in CT scanning.[50]

Owen et al prospectively evaluated 215 patients and found the sensitivity and specificity of Alvarado scoring were 93% and 81%.[51]

Shreef et al recently in 2010, performed a dual-centre prospective study, reviewing 350 patients and found the sensitivity and specificity of Alvarado scoring were 86% and 83% respectively.[52]

Macklin et al studied the sensitivity and specificity of MASS and found it to be 76.3% and 78.8% respectively.[53]

Meltzer et al conducted a prospective observational study on 261 patients and found MASS to have poor sensitivity and specificity at 72% and 54% respectively.[58]

In the present study as well, sensitivity and specificity of MASS was 49% and 89%.

RIPASA, during its development by Chong et al, was found to have a sensitivity and specificity of 88% and 67% respectively [5,6]. But few studies have been done consecutively, showing better results.

Butt MQ et al conducted a cross sectional study on 267 patients and found RIPASA score to have a sensitivity and specificity of 96.7% and 93% respectively. Its Positive predictive value was 98% and negative predictive value was 95%. Hence they concluded that RIPASA was a useful tool in diagnosis of appendicitis.[59]

A few studies have been done comparing RIPASA with MASS with the following results-

Chong et al, after developing RIPASA score, continued to evaluate their new score by prospectively enrolling 200 adults and children in a comparison of the RIPASA and Alvarado Scores. In this group of patients, the RIPASA was statistically superior to the Alvarado Score in Sensitivity (98% vs. 68%), NPV (97% vs. 71%) and accuracy (92% vs. 87%). Specificity and PPV were similar between the 2 scores.[56]

N.N., Mohammed et al compared RIPASA and Alvarado and found RIPASA to be a more convenient, accurate and specific score with the resulting comparative values of RIPASA and Alvarado as follows- Sensitivity – 96% and 58% respectively, Specificity – 90% and 85% respectively.[60]

Erdem et al studied 113 patients in a tertiary care centre and compared four clinical scoring systems- Alvarado, Eskelinen, Ohmann and RIPASA. They found a sensitivity level of 81%, 80.5%, 83.1% and 83% for each respectively. They concluded that Ohmann and RIPASA scores were the most specific in diagnosis of acute appendicitis.[61]

As compared to literature, in the present study, RIPASA was found to have a sensitivity, specificity, PPV and NPV of 49.4%, 96.9%, 93% and 69% respectively.

Over the last few years, since the advent of newer imaging systems, and due to the varied clinical accuracy of scoring systems, studies have also

been done to evaluate the use of imaging techniques like CT scanning in diagnosis of appendicitis.

Li SK conducted a retrospective study on 396 patients and concluded that MASS along with CT scan was very useful in identifying the pathological type of appendicitis, and hence aided in choosing the right therapeutic option.[64]

Liu W et al did a study in 297 patients who had undergone a CT for diagnosis of appendicitis, and retrospectively compared them with RIPASA and Alvarado scores. Their respective results were as follows- Sensitivity – 98.9% v/s 95.2% v/s 63.1%, Specificity – 96.4% v/s 73.6% v/s 80.9%, Diagnostic accuracy – 98% v/s 87.2% v/s 69.7%. They concluded that Multislice CT was the optimal tool for diagnosis of acute appendicitis, followed by RIPASA and then Alvarado scoring.[62]

Although studies show that CT scanning has maximum sensitivity and specificity in diagnosis of acute appendicitis, this has not been very widely in use, at least in a developing country like India. This is due to multiple factors- not only universal factors like risk of radiation exposure, but also other economic and practical causes like cost and availability. Hence some studies were done to try and find out which group of patients benefitted from CT scan, to try and filter the available resources.

Tan WJ et al prospectively compared Alvarado and CT scan, and found that CT scan was mainly beneficial in patients with Alvarado score <6 in males, and <8 in females.[63]

Jones et al in their study concluded that adults with an Alvarado score less than 3 were unlikely to benefit from a CT scan. [65]

Keeping all these factors in mind, the present study was analysed category-wise. When we retrospectively analysed the proven appendicitis cases with the scores, we found that among the HP/D categories, RIPASA picked up 93% cases as high probability of appendicitis, whereas MASS picked up only 81% as high probability cases. Hence, we understood that by using the RIPASA score, cases that fall under HP/D category can be more confidently taken up for surgery, without the need for any imaging modality.

Under the LP category in RIPASA, CT scan was done for all patients, and 58% of them turned out to be acute appendicitis, as compared to 80% in MASS. This further strengthens the point that RIPASA filters out low probability cases better than MASS. Hence, it can be inferred that the patients who fall under the LP category (RIPASA 5-7.5) will benefit the most from a CT scan.

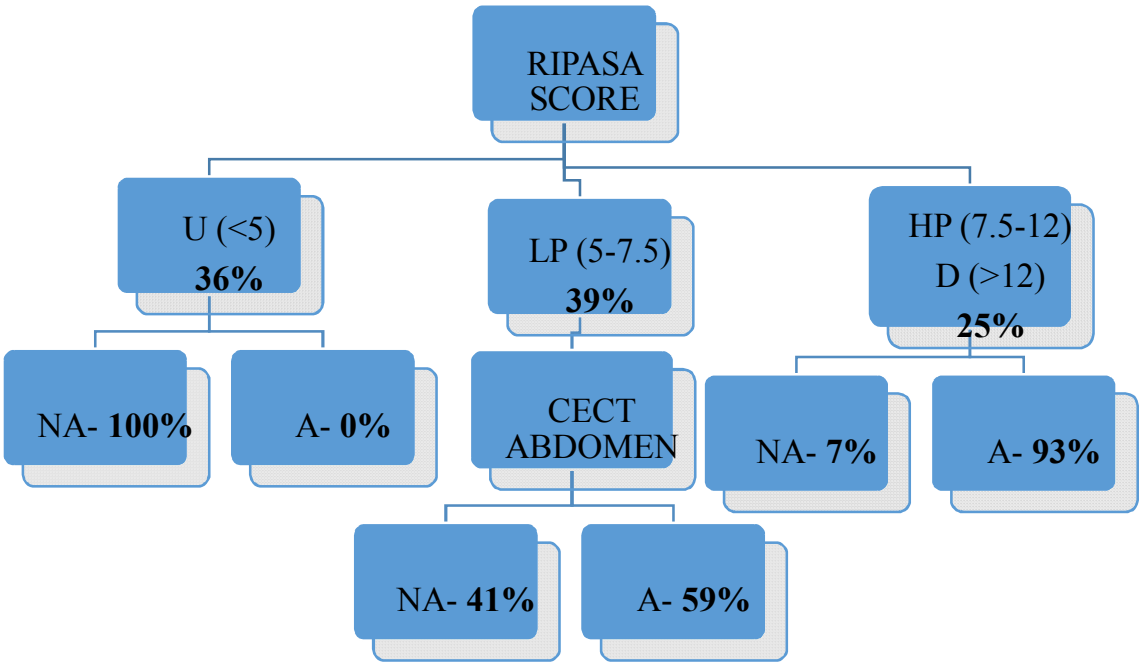
Under the U category, or "Unlikely to be appendicitis" category, RIPASA had 0 appendicitis cases. That means, it proved that 100% of the cases were unlikely. Meanwhile, MASS had 16% cases under unlikely category which were finally diagnosed as appendicitis. Hence, the number of missed cases would have been higher in MASS.

Hence in the present study, comparatively RIPASA seems to be better than MASS clinically as well as statistically.

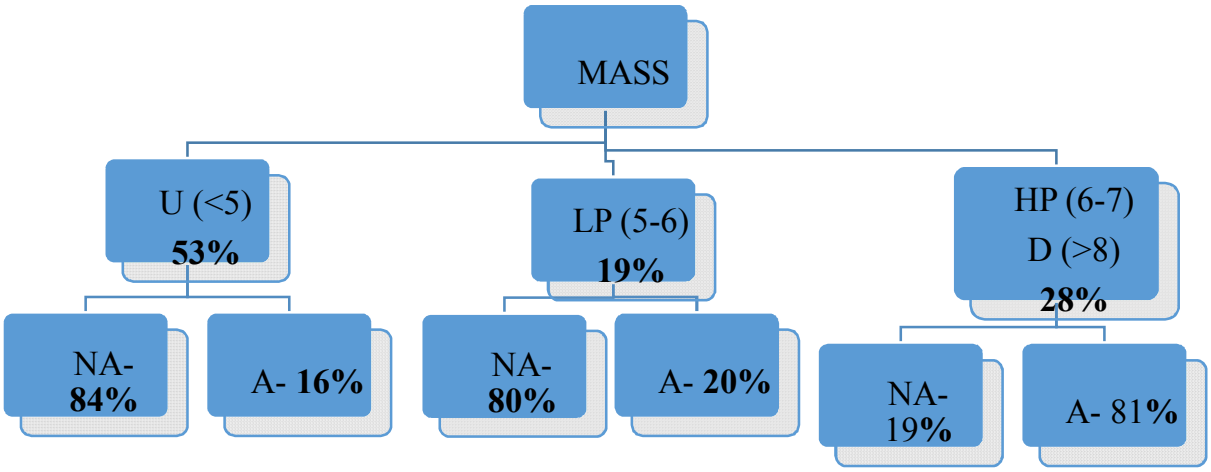
Summary

SUMMARY

The present study was conducted to find out a more suitable scoring system for enabling early diagnosis of acute appendicitis. It was conducted in the General Surgery Department in ESIC Medical College & PGIMSR, for a duration of 18 months, with a total study sample of 180. The first 180 patients among the age group of 5-50, presenting with RIF pain were recruited in the study. The mean age group was 28 +/- 11.06 years. Both sexes were affected with a slight male preponderance. RIPASA and MASS were calculated for all patients. Management was carried out according to RIPASA scoring. The results were as follows-



Management was carried out as per RIPASA, final diagnosis was confirmed and in retrospect final diagnosis was also compared with MASS. The results were as follows-



After final analysis, it was found that RIPASA was statistically superior to MASS in terms of Specificity (96% v/s 89%) and Positive Predictive Value (93% v/s 80%), and also to some extent in terms of Diagnostic Accuracy (75% v/s 71%). Whereas the Sensitivity (49% in both) and Negative Predictive Value (69% v/s 67%) were similar.

Conclusion

CONCLUSION

The present study concludes that, in the diagnosis of acute appendicitis, RIPASA score is more specific than Modified Alvarado Score, and also has a higher Positive Predictive Value and Diagnostic Accuracy. For the clinician, it gives a clearer categorization of management of patients with RIF pain- suggesting that in most cases, patients in HP/D category can straight away be taken up for surgery without any extra imaging modality, patients in LP category would benefit the maximum from CT imaging and that patients in the U category can be worked up for non-appendiceal diagnoses. RIPASA also reduces the number of "missed appendicitis" cases. Hence, RIPASA is clinically and statistically a better scoring system for the diagnosis of acute appendicitis, as compared to MASS.

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Annexures

CLINICAL PROFORMA

PATIENT'S NAME/IP NO.-

DATE/TIME-

RIPASA SCORE			MODIFIED ALVARADO SCORE			TREATMENT PLAN
DEMOGRAPHICS-	SEX		**SYMPTOMS-**	MIGRATORY PAIN		
	AGE			ANOREXIA		
SYMPTOMS-	RIF PAIN			NAUSEA/VOMITING		
	MIGRATORY PAIN		**SIGNS-**	RIF TENDERNESS		
	ANOREXIA			REBOUND TENDERNESS		
	NAUSEA/VOMITING			FEVER		
	DURATION OF SYMPTOMS		**INVESTIGATIONS-**	RAISED TC		
SIGNS-	RIF TENDERNESS					FU/HPE REPORT
	GUARDING					
	REBOUND TENDERNESS					
	ROVSING'S SIGN					
	FEVER >37'C <39'C					
INVESTIGATIONS-	RAISED TC					
	NEGATIVE URINALYSIS					
TOTAL			**TOTAL**			

PROFORMA

INFORMED CONSENT

Informed consent for patients who are attending Surgical OPD or Emergency Department in ESIC-Medical College & PGIMSR hospital, and whom we are inviting to participate in the research titled **"A comparative study of RIPASA and Modified Alvarado scoring systems for the diagnosis of Acute Appendicitis"** at ESIC Medical College & PGIMSR, KK Nagar, Chennai, 2012-13. Dr.Soundharya.S, M.S. (General surgery) post graduate is the principal investigator of this research under ESIC-Medical College & PGIMSR, Chennai.

Part I: INFORMATION SHEET

Introduction

We,**Dr.Soundharya.S**, General Surgery PG, guided byDr.R.Anbazhakan, Professor and Head, Dept. of General Surgery, are going to give you information and invite you to be a part of this research. Before you decide, you can talk to anyone of us you feel comfortable with about the research. This consent form may contain words that you do not understand. Please ask us to stop as we go through the information and we will take time to explain. If you have questions later, you can ask us.

Purpose of the research

We will be applying a new scoring system called the RIPASA score to aid in the management of your right sided abdominal pain, as opposed to the Modified Alvarado Score which is the older standard scoring system.

Type of Research

This research will involve your participation in a non-experimental manner, with assured privacy and confidentiality.

Right to Refuse or Withdraw

Your participation is strictly voluntary. Refusal to participate will not affect subsequent services to you

Procedures:

Both the older standard scoring (called Modified Alvarado score) and the newer scoring system (called RIPASA score) will be applied to you, but the further management of your pain abdomen will be based on the RIPASA score. If you fall under the category that is Unlikely to be appendicitis (U), you will be resorted to other investigations for further work up for your diagnosis. If you fall under the Low Probability (LP) category, you will be subjected to a CT scan, which will decide the further course of treatment. If you fall under the High Probability/Definite (HP/D) appendicitis category,

you will be taken up for surgery immediately and an appendicectomy will be performed. The resected appendix will be subjected to histopathological examination for confirmation of diagnosis.

Risks: Nil

Benefits:

- Decrease in unwarranted radiation exposure
- Decrease in unwarranted interventional modalities like diagnostic lap.
- Early diagnosis
- Decreased chance of complications and hence decreased morbidity and decreased number of total hospital days

Confidentiality

All information you provide will be kept confidential. Your name will not be used in any way and at any time during the study.

Whom to Contact

If you have any questions, you can ask them now or later. If you wish to ask questions later, you may contact:

Dr.Soundharya.S - 08939360662

This proposal has been reviewed and approved by Institute Ethics Committee, which is a committee whose task is to make sure that research participants are protected from any harm.

If you have any questions regarding any part of the study, feel free to ask.

Part II: CERTIFICATE OF CONSENT

I have read the information in the consent form (or it has been read to me). I was free to ask any questions and they have been answered. I understand what is being requested of me as a participant in this study. I have been given satisfactory answers to my questions. I certify that I am more than 18 years of age/ I am the legal guardian of the child (less than 18 years of age). I freely consent to participate in the study called "A comparative study of RIPASA and Modified Alvarado scoring systems in the diagnosis of Acute Appendicitis" at ESICMedical College & PGIMSR,KK Nagar, Chennai, 2013-14.

I have read and understood this consent form and the information provided to me.

I have been explained about the nature of the study.

My rights and responsibilities have been explained by the investigator

I agree to cooperate with the investigator.

Currently I am not participating in any research study.

I hereby give permission to the investigators to release the information obtained from me as a result of participation in the study to the regulatory authorities, government agency, ethics committee. I understand that they may inspect my original records.

My records will be kept confidential

I have decided to participate in the study.

As I was not able to read, the consent form has been read out to me by the investigator and all my questions have been answered and I give my consent with my free will.

_____

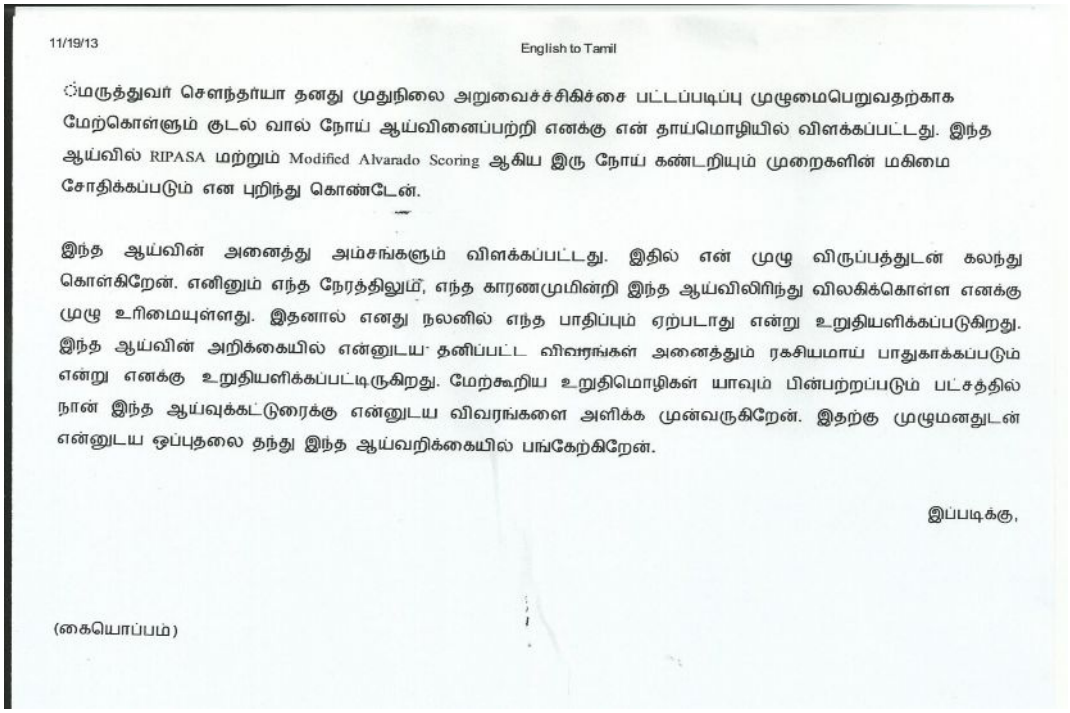
Name of Participant

_____ _____

Sign of Participant Name of Investigator (Signed)

Date

INFORMED CONSENT (In Tamil)



11/19/13 English to Tamil

மருத்துவர் சௌந்தர்யா தனது முதுநிலை அறுவைச்சிகிச்சை பட்டப்படிப்பு முழுமைபெறுவதற்காக மேற்கொள்ளும் குடல் வால் நோய் ஆய்வினைப்பற்றி எனக்கு என் தாய்மொழியில் விளக்கப்பட்டது. இந்த ஆய்வில் RIPASA மற்றும் Modified Alvarado Scoring ஆகிய இரு நோய் கண்டறியும் முறைகளின் மகிமை சோதிக்கப்படும் என புறிந்து கொண்டேன்.

இந்த ஆய்வின் அனைத்து அம்சங்களும் விளக்கப்பட்டது. இதில் என் முழு விருப்பத்துடன் கலந்து கொள்கிறேன். எனினும் எந்த நேரத்திலும், எந்த காரணமுமின்றி இந்த ஆய்விலிருந்து விலகிக்கொள்ள எனக்கு முழு உரிமையுள்ளது. இதனால் எனது நலனில் எந்த பாதிப்பும் ஏற்படாது என்று உறுதியளிக்கப்படுகிறது. இந்த ஆய்வின் அறிக்கையில் என்னுடய தனிப்பட்ட விவரங்கள் அனைத்தும் ரகசியமாய் பாதுகாக்கப்படும் என்று எனக்கு உறுதியளிக்கப்பட்டிருகிறது. மேற்கூறிய உறுதிமொழிகள் யாவும் பின்பற்றப்படும் பட்சத்தில் நான் இந்த ஆய்வுக்கட்டுரைக்கு என்னுடய விவரங்களை அளிக்க முன்வருகிறேன். இதற்கு முழுமனதுடன் என்னுடய ஒப்புதலை தந்து இந்த ஆய்வறிக்கையில் பங்கேற்கிறேன்.

இப்படிக்கு,

(கையொப்பம்)

_____

Name of Participant

_____ _____

Sign of Participant Name of Investigator (Signed)

Date

Sl.No.	NAME	AGE	SEX	IP NO.	RIPASA																	MASS										CLINICAL DIAGNOSIS	INVESTIGATIONS		TREATMENT	SURGERY DONE	RECURRENCE (F/U OF C)	FINAL DIAGNOSIS	
					AGE	SEX	RIF PAIN	MIG PAIN	ANOREXIA	NAUSEA/ VOMITING	DURATION	RIF TENDERNESS	GUARDING	REBOUND	ROVSING'S	FEVER	RAISED TC	NEGATIVE URINALYSIS	FINAL		ANALYSIS	MIG PAIN	ANOREXIA	NAUSEA/ VOMITING	RIF TENDERNESS	REBOUND	FEVER	RAISED TC	FINAL		ANALYSIS		USG	CECT				DIAGNOSIS	ANALYSIS
1	REVATHY	26	F	51-06153167	1	0.5	0.5	0.5	1	1	0.5	1	2	1	0	1	1	0	11	7.5--12	HP	1	1	1	2	1	1	2	9	>8	D	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
2	VARSHITA	11	F	51-17220550	1	0.5	0.5	0	0	0	0.5	1	0	0	0	1	1	1	6.5	5--7.5	LP	0	0	0	2	0	1	0	3	<5	U	Appendicitis	NA	NA	C	-		Mesenteric adenitis	NA
3	KARTHIGA	8	F	51-20959117	1	0.5	0.5	0	0	0	0.5	1	0	0	0	1	0	0	4.5	<=5	U	0	0	0	2	0	1	0	3	<5	U	AGE	NA	-	C	-		Mesenteric adenitis	NA
4	JEEVITHA	34	F	51-20013442	1	0.5	0.5	0	0	1	0.5	1	0	0	0	0	0	1	5.5	5--7.5	LP	0	0	1	2	0	0	0	3	<5	U	PID	NA	NA	R	-		Rt ovarian cyst	NA
5	GIRISH	27	M	51-31628143	1	1	0.5	0	0	0	1	1	2	1	2	1	1	1	12.5	>12	D	0	0	0	2	1	1	2	6	6--7	HP	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
6	MANJULA	28	F	51-10347785	1	0.5	0.5	0	0	0	1	1	2	0	0	1	1	0	8	7.5--12	HP	0	0	0	2	0	1	2	5	5--6	LP	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
7	AKASH	21	M	51-22248472	1	1	0.5	0	1	0	0.5	1	0	0	0	0	0	0	5	<=5	U	0	1	0	2	0	0	0	3	<5	U	Colitis	NA	-	C	-		Colitis	NA
8	YUVARAJ	35	M	51-21047631	1	0.5	0.5	0	0	1	0.5	1	0	0	0	0	0	0	4.5	<=5	U	0	0	1	2	0	0	0	3	<5	U	Appendicitis	NA	-	R	-		Rt Ovarian cyst	NA
9	ROJA	38	F	51-15355899	1	0.5	0.5	0	0	0	1	1	2	0	0	1	0	1	8	7.5--12	HP	0	0	0	2	0	1	0	3	<5	U	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
10	SURESH	28	M	51-23318411	1	1	0.5	0	0	0	1	1	2	0	2	1	1	1	11.5	7.5--12	HP	0	0	0	2	0	1	2	5	5--6	LP	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
11	DEIVAYANI	32	F	51-16834454	1	0.5	0.5	0	1	1	0.5	1	0	0	0	0	0	0	5.5	5--7.5	LP	0	1	1	2	0	0	0	4	<5	U	Appendicitis	I	NA	R	-		Endometriosis	NA
12	ARCHANA	26	F	51-22138915	1	0.5	0.5	0	0	1	1	0	0	0	0	0	0	0	4	<=5	U	0	0	1	0	0	0	0	1	<5	U	Rt ureteric colic	NA	-	C	-		Rt VUJ calculus	NA
13	SANKAR	34	M	51-23802400	1	1	0.5	0	0	0	1	1	2	0	0	1	1	0	8.5	7.5--12	HP	0	0	0	2	0	1	2	5	5--6	LP	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
14	KUMARI	36	F	51-51113637	1	0.5	0.5	0.5	1	0	1	1	0	0	0	1	0	1	7.5	5--7.5	LP	1	1	0	2	0	1	0	5	5--6	LP	Appendicitis	I	A	S	Appendicectomy		Acute appendicitis	A
15	REVATHI	31	F	51-17144558	1	0.5	0.5	0	0	1	0.5	1	0	0	0	1	1	0	6.5	5--7.5	LP	0	0	1	2	0	1	2	6	6--7	HP	Appendicitis	NA	NA	C	-		Cystitis	NA
16	JOTHI	18	F	51-21999648	1	0.5	0.5	0	0	1	0.5	0	0	0	0	0	0	1	4.5	<=5	U	0	0	1	0	0	0	0	1	<5	U	Dysmenorrhoea	NA	-	R	-		Rt ovarian follicular cyst	NA
17	YASWANTH	9	M	51-14745480	1	1	0.5	0	0	0	0.5	1	0	0	0	0	0	0	4	<=5	U	0	0	0	2	0	0	0	2	<5	U	Non-specific abd pain	NA	-	C	-		Non-specific abd pain	NA
18	MALLIGA	23	F	51-13618172	1	0.5	0.5	0	0	0	1	1	2	0	0	1	1	0	8	7.5--12	HP	0	0	0	2	0	1	2	5	5--6	LP	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
19	AISHWARYA	33	F	51-22330590	1	0.5	0.5	0	0	0	0.5	0	0	0	0	1	1	0	4.5	<=5	U	0	0	0	0	0	1	2	3	<5	U	UTI	NA	-	C	-		Rt ureteric calculus+cystitis	NA
20	RAMANJANEYULU	21	M	51-22245947	1	1	0.5	0	0	0	0.5	1	2	0	0	1	0	0	7	5--7.5	LP	0	0	0	2	0	1	2	5	5--6	LP	Appendicitis	A	A	C	-	--	Acute appendicitis	A
21	MUSTAFA	24	M	51-23217986	1	1	0.5	0	1	0	0.5	1	0	0	0	1	1	0	7	5--7.5	LP	0	1	0	2	0	1	2	6	6--7	HP	Appendicitis	NA	NA	C	-		Ileocaecal TB	NA
22	VISWA	30	M	51-16835967	1	1	0.5	0	0	0	0.5	0	0	0	0	1	0	0	4	<=5	U	0	0	0	0	0	1	0	1	<5	U	AGE	NA	-	C	-		Colitis	NA
23	THABITHAL	45	F	51-15858929	0.5	0.5	0.5	0	0	0	0.5	1	0	0	0	1	0	0	4	<=5	U	0	0	0	2	0	1	0	3	<5	U	PID	NA	-	R	-		PID	NA
24	PUSHPARAJ	9	M	51-17004813	1	1	0.5	0.5	1	0	1	1	0	1	0	1	1	1	10	7.5--12	HP	1	1	0	2	1	1	2	8	>8	D	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
25	VIJAYAKUMAR	13	M	51-22859660	1	1	0.5	0	0	0	1	1	2	0	0	0	0	1	7.5	5--7.5	LP	0	0	0	2	0	0	0	2	<5	U	Blunt trauma for evaluation	NA	NA	C	-		Rectus sheath haematoma	NA
26	LOKESH	39	M	51-23747993	1	1	0.5	0	0	1	0.5	0	0	0	0	0	0	0	4	<=5	U	0	0	1	0	0	0	0	1	<5	U	Rt ureteric colic	NA	-	C	-		Rt ureteric calculus	NA
27	PRITHVIRAJ	30	M	51-10133829	1	1	0.5	0	0	0	0.5	1	0	0	0	0	0	0	4	<=5	U	0	0	0	2	0	0	0	2	<5	U	Appendicitis	NA	-	C	-		Non-specific abd pain	NA
28	BABU	46	M	51-11316183	0.5	1	0.5	0	1	1	0.5	1	2	1	0	1	1	1	11.5	7.5--12	HP	0	1	1	2	1	1	2	8	>8	D	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
29	MAPALI DEVI	24	F	51-16381601	1	0.5	0.5	0	0	1	0.5	1	0	0	0	0	0	1	5.5	5--7.5	LP	0	0	1	2	0	0	0	3	<5	U	Rt ovarian cyst	NA	NA	R	-		Rt ectopic pregnancy	NA
30	AJAY	36	M	51-21652236	1	1	0.5	0	0	1	0.5	0	0	0	0	0	0	0	4	<=5	U	0	0	1	0	0	0	0	1	<5	U	Rt ureteric colic	NA	-	C	-		Rt ureteric calculus	NA
31	SHAKTIVEL	45	M	51-10551926	0.5	1	0.5	0.5	1	1	1	1	2	1	2	1	1	0	13.5	>12	D	1	1	1	2	1	1	2	9	>8	D	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis (perforated)	A
32	FARIDA BEGUM	48	F	51-13376568	0.5	0.5	0.5	0	0	0	0.5	1	0	0	0	0	0	0	3	<=5	U	0	0	0	2	0	0	0	2	<5	U	PID	NA	-	R	-		PID	NA
33	MANOHARAN	49	M	51-24183341	0.5	1	0.5	0	0	1	0.5	0	0	0	0	1	0	0	4.5	<=5	U	0	0	1	0	0	1	0	2	<5	U	Colitis	NA	-	C	-		Colitis	NA
34	KUPPAMMAL	39	F	51-21569856	1	0.5	0.5	0	0	0	1	1	0	0	0	1	1	0	6	5--7.5	LP	0	0	0	2	0	1	2	5	5--6	LP	PID	I	A	S	Appendicectomy		Acute appendicitis	A
35	JAYANTHI	32	F	51-22442568	0.5	0.5	0.5	0	0	0	0.5	0	0	0	0	1	1	0	4	<=5	U	0	0	0	0	0	1	2	3	<5	U	UTI	NA	-	C	-		UTI	NA
36	SELVAKUMAR	16	M	51-21243129	1	1	0.5	0	0	0	0.5	0	0	0	0	0	0	0	3	<=5	U	0	0	0	0	0	0	0	0	<5	U	Non specific abd pain	NA	-	C	-		Non-specific abd pain	NA
37	KAPIL MEHTA	32	M	51-47820987	1	1	0.5	0	0	0	1	1	2	0	0	1	1	1	9.5	7.5--12	HP	0	0	0	2	0	1	2	5	5--6	LP	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
38	BANUMATHY	40	F	51-31249876	0.5	0.5	0.5	0	1	1	0.5	1	0	0	0	1	1	0	7	5--7.5	LP	0	1	1	2	0	1	2	7	6--7	HP	Colitis	A	A	S	Appendicectomy		Acute appendicitis	A
39	CHITRA	40	F	51-15162548	0.5	0.5	0.5	0	1	1	0.5	1	0	0	0	0	0	1	6	5--7.5	LP	0	1	1	2	0	0	0	4	<5	U	Rt pelvic mass	NA	NA	R	-		Rt malignant ovarian tumour	NA
40	DURGADEVI	18	F	51-15584281	1	0.5	0.5	0	0	1	1	0	0	0	0	0	0	1	5	<=5	U	0	0	1	0	0	0	0	1	<5	U	Menstrual cycle related	NA	-	R	-		Mittelschmertz syndrome	NA
41	ANAND	21	M	51-16729816	1	1	0.5	0.5	0	0	1	1	0	0	0	0	1	1	7	5--7.5	LP	1	0	0	2	0	0	2	5	5--6	LP	Appendicitis	A	A	S	Appendicectomy		Acute appendicitis	A
42	KRISHNAN	46	M	51-21197627	0.5	1	0.5	0	1	0	0.5	1	0	0	0	0	0	1	5.5	5--7.5	LP	0	1	0	2	0	0	0	3	<5	U	Colonic malignancy	NA	NA	S	Rt extended hemicolectomy		Ca caecum	NA
43	SIVASANKARAN	18	M	51-21710314	1	1	0.5	0.5	0	0	0.5	1	0	0	0	1	0	0	5.5	5--7.5	LP	1	0	0	2	0	1	2	6	6--7	HP	Appendicitis	A	A	S	Appendicectomy		Acute appendicitis	A
44	ROHIT	10	M	51-14799755	1	1	0.5	0	0	0	0.5	1	0	0	0	0	0	1	5	<=5	U	0	0	0	2	0	0	0	2	<5	U	Functional abd pain	NA	-	C	-		Functional abd pain	NA
45	LAVANYA	10	F	51-23140854	1	0.5	0.5	0	0	0	0.5	1	0	0	0	0	0	1	4.5	<=5	U	0	0	0	2	0	0	0	2	<5	U	Non-specific abd pain	NA	-	C	-		Mesenteric adenitis	NA
46	THIRUNAVUKKARASU	30	M	51-51678902	1	1	0.5	0	0	1	0.5	1	0	0	0	1	1	0	7	5--7.5	LP	0	0	1	0	0	1	2	4	5--6	LP	Rt ureteric colic wth UTI	A	A	S	Appendicectomy		Acute appendicitis	A
47	RANJITH KUMAR	29	M	51-22016281	1	1	0.5	0	1	0	0.5	1	0	0	0	1	1	0	7	5--7.5	LP	0	1	0	2	0	1	2	6	5--6	LP	Intestinal TB	NA	NA	C	-		Ileocaecal TB	NA
48	SRIDEVI	18	F	51-20981782	1	0.5	0.5	0.5	1	1	0.5	1	2	1	0	1	1	1	12	7.5--12	HP	1	1	1	2	1	1	2	9	>8	D	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
49	SUBRAMANI	41	M	51-21784982	0.5	1	0.5	0	0	1	1	0	0	0	0	0	0	0	4	<=5	U	0	0	1	0	0	0	0	1	<5	U	Rt ureteric colic	NA	-	C	-		Rt ureteric calculus	NA
50	LAKSHMI	48	F	51-23164046	0.5	0.5	0.5	0	1	0	0.5	1	2	0	0	0	0	1	7	5--7.5	LP	0	1	0	2	0	0	0	3	<5	U	Appendicitis	A	A	S	Appendicectomy		Acute appendicitis	A
51	SANGEETHA	24	F	51-16931366	1	0.5	0.5	0.5	0	1	1	1	2	1	2	1	1	1	13.5	>12	D	1	0	1	2	1	1	2	8	>8	D	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis (gangrene)	A
52	KAVITA	19	F	51-13681783	1	0.5	0.5	0	0	1	1	1	0	0	0	0	0	1	6	5--7.5	LP	0	0	1	2	0	0	0	3	<5	U	PID	A	A	S	Appendicectomy		Acute appendicitis	A
53	LALITHA	37	F	51-20364956	1	0.5	0.5	0	0	0	0.5	1	0	0	0	1	0	0	4.5	<=5	U	0	0	0	2	0	1	0	3	<5	U	PID	NA	-	C	-		PID	NA
54	BOOPATHY	40	M	51-80530693	0.5	1	0.5	0	0	1	0.5	0	0	0	0	0	0	0	3.5	<=5	U	0	0	1	0	0	0	0	1	<5	U	Rt ureteric colic	NA	-	C	-		Rt ureteric calculus	NA
55	RAJAMANI	26	M	51-12809856	1	1	0.5	0.5	0	1	1	1	0	0	0	1	0	1	8	7.5--12	HP	1	0	1	2	0	1	0	5	5--6	LP	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
56	KANCHANA	43	F	63-80419285	0.5	0.5	0.5	0	1	1	0.5	1	0	0	0	0	0	1	6	5--7.5	LP	0	1	1	2	0	0	0	4	<5	U	Intestinal TB	NA	NA	S	Rt hemicolectomy		Rt colonic malignancy	NA
57	PRASANTH	11	M	51-22372424	1	1	0.5	0	0	0	0.5	1	0	0	0	1	0	0	5	<=5	U	0	0	0	2	0	1	0	3	<5	U	Non-specific abd pain	NA	-	C	-		Mesenteric adenitis	NA
58	MANOJ KUMAR	19	M	51-13813211	1	1	0.5	0.5	0	0	1	1	2	0	0	1	1	1	10	7.5--12	HP	1	0	0	2	0	1	2	6	6--7	HP	Appendicitis	A	-	S	Omentectomy + Appendicectomy		Omental torsion	NA
59	HARIKRISHNAN	24	M	51-22946294	1	1	0.5	0.5	0	1	1	1	0	1	0	0	1	1	9	7.5--12	HP	1	0	1	2	1	0	2	7	6--7	HP	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
60	KAMALESH	7	M	51-22184124	1	0.5	0.5	0	0	1	0.5	1	0	0	0	1	1	0	6.5	5--7.5	LP	0	0	1	2	0	1	2	6	6--7	HP	UTI	I	NA	R	-		Rt double ureter with cystitis	NA
61	GOVINDA	22	M	51-20645099	1	1	0.5	0	0	1	0.5	0	0	0	0	0	0	0	4	<=5	U	0	0	1	0	0	0	0	1	<5	U	Colitis	NA	-	C	-		Colitis	NA
62	MANJULA	41	F	51-16422611	0.5	0.5	0.5	0	0	0	0.5	0	0	0	0	1	1	0	4	<=5	U	0	0	0	0	0	1	2	3	<5	U	UTI	NA	-	R	-		PID	NA
63	BALAMURUGAN	13	M	51-13498933	1	1	0.5	0.5	1	1	0.5	1	0	1	0	0	1	0	8.5	7.5--12	HP	1	1	1	2	1	0	2	8	>8	D	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
64	MOHANA	36	F	51-21655844	1	0.5	0.5	0	0	1	0.5	0	0	0	0	0	0	0	3.5	<=5	U	0	0	1	0	0	0	0	1	<5	U	Rt ureteric colic	NA	-	C	-		Rt ureteric calculus	NA
65	CHELLADURAI	49	M	51-23242769	0.5	1	0.5	0	1	0	0.5	1	0	0	0	0	0	1	5.5	5--7.5	LP	0	1	0	2	0	0	0	3	<5	U	Abd pain for evaluation	NA	NA	S	Rt hemicolectomy		Ca colon	NA
66	SANGEETHA	20	F	51-24001478	1	0.5	0.5	0.5	1	1	0.5	1	2	1	0	1	1	1	12	7.5--12	HP	1	1	1	2	1	1	2	9	>8	D	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis (perforated)	A
67	PARVATHI	36	F	51-23937097	1	0.5	0.5	0	0	1	1	0	0	0	0	0	0	0	4	<=5	U	0	0	1	0	0	0	0	1	<5	U	Rt ureteric colic	NA	-	R	-		Rt twisted ovarian cyst	NA
68	THANGAMANI	43	M	51-20744204	0.5	1	0.5	0	0	0	0.5	0	0	0	0	1	1	0	4.5	<=5	U	0	0	0	0	0	1	2	3	<5	U	AGE	NA	-	C	-		AGE	NA
69	FARIDA AZIZ	18	F	51-15276568	1	0.5	0.5	0.5	1	1	0.5	1	0	1	0	1	1	1	10	7.5--12	HP	1	1	1	2	1	1	2	9	>8	D	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
70	KANNAN	20	M	51-14508141	1	1	0.5	0	0	1	1	0	0	0	0	0	0	0	4.5	<=5	U	0	0	1	0	0	0	0	1	<5	U	Rt ureteric colic	NA	-	C	-		Rt VUJ calculus	NA
71	JAMEELA	41	F	51-22060561	0.5	0.5	0.5	0	0	1	0.5	0	0	0	0	1	0.5	0	4.5	<=5	U	0	0	1	0	0	1	0	2	<5	U	Rt ureteric colic	NA	-	C	-		Rt ureteric calculus+cystitis	NA
72	HEMALATHA	26	F	51-21230321	1	0.5	0.5	0.5	0	0	1	1	0	1	0	1	1	1	8.5	7.5--12	HP	1	0	0	2	1	1	2	7	6--7	HP	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
73	MARIMUTHU	23	M	51-16003096	1	1	0.5	0.5	0	1	1	1	2	1	2	1	1	1	14	>12	D	1	0	1	2	1	1	2	8	>8	D	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis (perforated)	A
74	MALLISWARI	33	F	51-17185129	1	0.5	0.5	0	1	0	0.5	1	0	0	0	1	1	0	6.5	5--7.5	LP	0	1	0	2	0	1	2	6	6--7	HP	Pelvic mass for evaluation	NA	NA	R	-		Frozen pelvis ?GU TB	NA
75	PREMA	48	F	51-22275073	0.5	0.5	0.5	0	0	0	0.5	1	0	0	0	0	0	0	3	<=5	U	0	0	0	2	0	0	0	2	<5	U	Appendicitis	NA	-	R	-		Rt PCOD	NA
76	KARPAGAM	25	F	51-21771420	1	0.5	0.5	0.5	1	1	1	1	2	1	0	1	1	1	12.5	>12	D	1	1	1	2	1	1	2	9	>8	D	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis (gangrene)	A
77	KUMAR	40	M	51-21044948	0.5	1	0.5	0	1	1	0.5	1	0	0	0	0	0	1	6.5	5--7.5	LP	0	1	1	2	0	0	0	4	<5	U	Adhesiocolic S/p laparotomy	NA	NA	S	Adhesiolysis		Subacute obstr/Post-op adhesions	NA
78	SUBBURAM	36	M	51-14802611	1	1	0.5	0	0	0	0.5	1	0	0	0	0	0	0	4	<=5	U	0	0	0	2	0	0	0	2	<5	U	Non-specific abd pain	NA	-	C	-		Non-specific abd pain	NA
79	PRADEEP RAJ	18	M	51-23402622	1	1	0.5	0.5	0	1	0.5	1	0	1	0	1	1	1	9.5	7.5--12	HP	1	0	1	2	1	1	2	8	>8	D	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
80	MANI	42	M	51-22785563	0.5	1	0.5	0	0	1	0.5	0	0	0	0	0	0	0	3.5	<=5	U	0	0	1	0	0	0	0	1	<5	U	Epidydimoorchitis	NA	-	C	-		Epidydimoorchitis	NA
81	PREETHILAKSHMI	22	F	51-63128125	1	0.5	0.5	0	0	0	0.5	1	0	0	0	1	1	1	6.5	5--7.5	LP	0	0	0	2	0	1	2	5	5--6	LP	Appendicitis	A	A	C	-	--	Acute appendicitis	A
82	ARUL JOTHI	35	F	51-20107352	1	0.5	0.5	0	0	0	0.5	1	0	0	0	0	0	1	4.5	<=5	U	0	0	0	2	0	0	0	2	<5	U	Dysmenorrhoea	NA	-	R	-		Fibroid uterus	NA
83	SARASU	31	F	51-11626672	1	0.5	0.5	0	0	0	0.5	1	0	0	0	0	0	1	4.5	<=5	U	0	0	0	2	0	0	0	2	<5	U	Rt ovarian pathology	NA	-	R	-		Rt ovarian haemorrhagic cyst	NA
84	DHANALAKSHMI	14	F	51-21562751	1	0.5	0.5	0.5	1	1	0.5	1	0	0	0	1	1	1	9	7.5--12	HP	1	1	1	2	0	1	2	8	>8	D	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
85	REVATHI	36	F	51-23768688	1	0.5	0.5	0	0	0	0.5	1	0	0	0	0	0	0	3.5	<=5	U	0	0	0	2	0	0	0	2	<5	U	PID	NA	-	C	-		PID	NA
86	PANADASS	44	M	51-22607471	0.5	1	0.5	0	0	1	1	0	0	0	0	0	0	0	4	<=5	U	0	0	1	0	0	0	0	1	<5	U	Rt ureteric colic	NA	-	C	-		Rt ureteric calculus	NA
87	GAJAVALI	25	M	51-22863170	1	1	0.5	0	0	0	0.5	1	0	0	0	1	1	1	7	5--7.5	LP	0	0	0	2	0	1	2	5	5--6	LP	Appendicitis	A	A	S	Appendicectomy		Acute appendicitis	A
88	VASUDEVAN	30	M	51-23355698	1	1	0.5	0	0	1	0.5	1	0	0	0	1	1	1	8	7.5--12	HP	0	0	1	2	0	1	2	6	6--7	HP	Appendicitis	NA	NA	C	-		AGE	NA
89	SATISH KUMAR	24	M	51-21788689	1	1	0.5	0.5	0	1	0.5	1	2	1	2	1	1	1	13.5	>12	D	1	0	1	2	1	1	2	8	>8	D	Appendicitis	-	-	S	Appendicectomy		Acute appendicitis (perforated)	A
90	JENIFFER	6	F	51-22461211	1	0.5	0.5	0	0	0	1	0	0	0	0	0	0	1	4	<=5	U	0	0	0	0	0	0	0	0	<5	U	Non-specific abd pain	NA	-	C	-		Non-specific abd pain	NA
91	VELAYUDHAM	33	M	51-15613178	1	1	0.5	0	0	0	1	1	2	0	2	1	1	1	11.5	7.5--12	HP	0	0	0	2	0	1	2	5	5--6	LP	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A

92	RENUKA	30	F	51-21600825	1	0.5	0.5	0.5	1	1	0.5	1	0	0	0	0	0	1	7	5--7.5	LP	1	1	1	2	0	0	0	5	5--6	LP	Appendicitis	I	A	C	-	--	Acute appendicitis	A
93	VINAYAGAMOORTHY	26	M	51-21099653	1	1	0.5	0	0	1	0.5	0	0	0	0	1	0	0	5	<=5	U	0	0	1	0	0	1	0	2	<5	U	AGE	NA	-	C	-		AGE	NA
94	RAVI	16	M	51-17277864	1	1	0.5	0	0	1	0.5	1	0	0	0	0	0	0	5	<=5	U	0	0	1	2	0	0	0	3	<5	U	AGE	NA	-	C	-		AGE	NA
95	DIVYA BHARATHI	23	F	51-17117000	1	0.5	0.5	0	1	1	1	1	2	1	0	1	1	0	11	7.5--12	HP	0	1	1	2	1	1	2	9	>8	D	Appendicitis	NA	-	R	-		Rt ruptured ovarian cyst	NA
96	DEVI	48	F	51-22230471	0.5	0.5	0.5	0	0	0	0.5	1	0	0	0	1	1	1	6	5--7.5	LP	0	0	0	2	0	1	2	5	5--6	LP	PID	A	A	C	-	--	Acute appendicitis	A
97	SHANTHI	39	F	51-14031430	1	0.5	0.5	0	0	0	0.5	1	0	0	0	1	1	0	5.5	5--7.5	LP	0	0	0	2	0	1	2	5	5--6	LP	UTI	NA	NA	C	-		UTI	NA
98	ACHUTHAM	29	M	51-16891963	1	1	0.5	0	1	1	0.5	1	0	0	0	0	0	1	7	5--7.5	LP	0	1	1	2	0	0	0	4	<5	U	AGE	NA	NA	C	-		?IBD- for evaluation	NA
99	SUSILA	48	F	51-15688714	0.5	0.5	0.5	0	1	0	0.5	1	2	0	2	1	1	0	10	7.5--12	HP	0	1	0	2	0	1	2	6	6--7	HP	Appendicitis	A	-	S	Drainage		Appendicular abscess	A
100	MANOJ	23	M	51-24305735	1	1	0.5	0.5	0	1	0.5	1	0	0	0	1	0	1	7.5	5--7.5	LP	1	0	1	2	0	1	0	5	5--6	LP	Appendicitis	A	A	C	-	Lost to F/U	Acute appendicitis	A
101	RAJKUMARI	12	F	51-23557689	1	0.5	0.5	0.5	0	0	0.5	1	0	0	0	1	0	1	6	5--7.5	LP	1	0	0	2	0	1	0	4	<5	U	Mesenteric adenitis	A	A	S	Appendicectomy		Acute appendicitis	A
102	JAYALAKSHMI	28	F	51-01916335	1	0.5	0.5	0	0	0	0.5	1	0	0	0	0	0	1	4.5	<=5	U	0	0	0	2	0	0	0	2	<5	U	Dysmenorrhoea	NA	-	R	-		Rt adnexal mass for evaluation	NA
103	MUTHURAJ	7	M	51-00993457	1	1	0.5	0	1	0.5	1	0	0	0	0	0	0	1	6	5--7.5	LP	0	0	1	2	0	0	0	3	<5	U	Appendicitis	NA	NA	C	-		AGE	NA
104	SANTOSH KUMAR	16	M	51-14471577	1	1	0.5	0.5	1	1	1	1	2	1	0	1	1	0	12	7.5--12	HP	1	1	1	2	1	1	2	9	>8	D	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
105	JEBAMALAI	45	M	51-24606514	0.5	0.5	0.5	0	0	1	0.5	1	2	0	0	0	0	1	7	5--7.5	LP	0	0	1	2	0	0	0	3	<5	U	Colonic malignancy	I	A	S	Interval Appendicectomy		Appendicular mass	A
106	MANIKANDAN	27	M	51-14596418	1	1	0.5	0	1	1	0.5	1	0	0	0	0	0	1	7	5--7.5	LP	0	1	1	2	0	0	0	4	<5	U	Intestinal TB	NA	NA	C	-		Ca colon	NA
107	PUNNIYAKOTI	29	M	51-22551281	1	1	0.5	0	0	1	0.5	1	0	0	0	1	1	0	7	5--7.5	LP	0	0	1	2	0	1	2	6	6--7	HP	Appendicitis	NA	NA	C	-		Rt VUJ calculus+ pyelonephritis	NA
108	SURESH KUMAR	35	M	51-22627209	1	1	0.5	0	0	0	0.5	1	0	1	0	0	1	1	7	5--7.5	LP	0	0	0	2	1	0	2	5	5--6	LP	Appendicitis	A	A	C	-	--	Acute appendicitis	A
109	DEVAN	6	M	51-21664746	1	1	0.5	0	1	0	0.5	1	0	0	0	0	0	0	5	<=5	U	0	1	0	2	0	0	0	3	<5	U	Non-specific abd pain	NA	-	C	-		Mesenteric adenitis	NA
110	SIVAKUMARI	18	F	51-12516568	1	0.5	0.5	0	1	0	0.5	1	0	0	0	1	1	1	7.5	5--7.5	LP	0	1	0	2	0	1	2	6	6--7	HP	Appendicitis	I	NA	C	-		Ileocaecal TB	NA
111	GEETHA	31	F	51-17100402	1	0.5	0.5	0.5	1	1	0.5	1	0	0	0	1	1	1	9	7.5--12	HP	1	1	1	2	0	1	2	8	>8	D	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
112	SIVAKUMAR	29	M	51-15661009	1	1	0.5	0.5	0	0	0.5	1	0	0	0	1	1	1	7.5	5--7.5	LP	1	0	0	2	0	1	0	4	<5	U	Appendicitis	A	A	C	-	--	Acute appendicitis	A
113	PRASANNA DEVI	22	F	51-22060460	1	0.5	0.5	0	0	0	0.5	1	2	0	0	1	0	1	7.5	5--7.5	LP	0	0	0	2	0	1	0	3	<5	U	Appendicitis	A	A	S	Appendicectomy		Acute appendicitis	A
114	NARASINGA RAO	31	M	51-17551152	1	1	0.5	0	0	1	1	0	0	0	0	0	0	0	4.5	<=5	U	0	0	1	0	0	0	0	1	<5	U	Rt ureteric colic	NA	-	C	-		Rt ureteric calculus	NA
115	MOHANAVALLI	31	F	51-21776568	1	0.5	0.5	0	0	0	0.5	1	0	0	0	0	0	1	4.5	<=5	U	0	0	0	2	0	0	0	2	<5	U	PID	NA	-	R	-		PID	NA
116	KANNIAPPAN	37	M	51-12881171	1	1	0.5	0	0	1	0.5	1	2	1	0	0	1	1	10	7.5--12	HP	0	0	1	2	1	0	2	6	6--7	HP	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
117	NAGAVALLI	32	F	51-14578722	1	0.5	0.5	0.5	0	1	0.5	1	0	1	0	1	1	1	9	7.5--12	HP	1	0	1	2	1	1	2	8	>8	D	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
118	ASHOK	21	M	51-13491367	1	1	0.5	0	0	1	0.5	0	0	0	0	0	0	1	5	<=5	U	0	0	1	0	0	0	0	1	<5	U	AGE	NA	-	C	-		AGE	NA
119	SUDALAI	23	M	51-16754858	1	1	0.5	0	0	0	0.5	1	0	0	0	0	0	1	5	<=5	U	0	0	0	2	0	0	0	2	<5	U	UTI	NA	-	C	-		UTI	NA
120	MANIKANDAN	17	M	51-16252511	1	1	0.5	0.5	0	0	0.5	1	0	1	0	1	1	1	8.5	7.5--12	HP	1	0	0	2	1	1	2	7	6--7	HP	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
121	CHANDRA	23	F	51-15709108	1	0.5	0.5	0	0	0	0.5	1	0	0	0	0	0	1	4.5	<=5	U	0	0	0	2	0	0	0	2	<5	U	Menstrual cycle related	NA	-	R	-		Rt paraovarian cyst	NA
122	AFAUR RAHMAN	29	M	51-22785322	1	1	0.5	0	0	1	0.5	1	0	0	0	0	0	0	5	<=5	U	0	0	1	2	0	0	0	3	<5	U	UTI	NA	-	C	-		Rt ureteric calculus/cystitis	NA
123	RAJKUMAR	26	M	51-22492886	1	1	0.5	0.5	0	1	0.5	1	0	1	0	1	1	1	9.5	7.5--12	HP	1	0	1	2	1	1	2	8	>8	D	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
124	JAYAPAL	23	M	51-60509482	1	1	0.5	0.5	0	0	1	1	0	0	0	1	1	1	8	7.5--12	HP	1	0	0	2	0	1	2	6	6--7	HP	Appendicitis	A	A	C	-	--	Acute appendicitis	A
125	MURUGESAN	19	M	51-21569499	1	1	0.5	0	0	0	0.5	1	0	0	0	1	1	1	7	5--7.5	LP	0	0	0	2	0	1	2	5	5--6	LP	AGE	I	NA	C	-		AGE	NA
126	VELLACHI	41	F	51-22548926	0.5	0.5	0.5	0	1	1	1	1	0	0	0	0	0	1	6.5	5--7.5	LP	0	1	1	2	0	0	0	4	<5	U	PID	A	A	S	Interval Appendicectomy		Appendicular mass	A
127	KALAIRASAN	22	M	51-21318994	1	1	0.5	0	0	0	0.5	1	0	0	0	1	1	1	7	5--7.5	LP	0	0	0	2	0	1	2	5	5--6	LP	Intestinal TB	I	NA	C	-		Ileocaecal TB	NA
128	PANEERSELVAM	43	M	51-14552718	0.5	1	0.5	0	1	1	0.5	1	0	1	0	0	0	0	6.5	5--7.5	LP	0	1	1	2	1	0	0	5	5--6	LP	Intestinal TB	A	A	S	Appendicectomy		Acute appendicitis	A
129	SELVI	29	F	51-21501016	1	0.5	0.5	0.5	0	0	0.5	1	0	0	0	1	1	1	7	5--7.5	LP	1	0	0	2	0	1	2	6	6--7	HP	Appendicitis	A	A	C	-	--	Acute appendicitis	A
130	JAMES ANTONY	28	M	51-20740277	1	1	0.5	0	0	1	0.5	0	0	0	0	0	0	0	4	<=5	U	0	0	1	0	0	0	0	1	<5	U	Rt ureteric colic	NA	-	C	-		Rt ureteric calculus	NA
131	SHEELA	30	F	51-23075941	1	0.5	0.5	0	0	1	1	1	0	0	0	1	1	1	8	7.5--12	HP	0	0	1	2	0	1	2	6	6--7	HP	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
132	DILLI BABU	31	M	51-22503558	1	1	0.5	0.5	0	0	0.5	1	0	0	0	1	1	1	7.5	5--7.5	LP	1	0	0	2	0	1	2	6	6--7	HP	Appendicitis	A	A	C	-	+ (Interval	Acute appendicitis	A
133	MARUDUPANDIAN	22	M	51-20270080	1	1	0.5	0	0	0	0.5	0	0	0	0	0	0	1	4	<=5	U	0	0	0	0	0	0	0	0	<5	U	Colitis	NA	-	C	-		Colitis	NA
134	MANIKANDAN	24	M	51-20737322	1	1	0.5	0.5	0	1	1	1	0	1	0	1	1	1	10	7.5--12	HP	1	0	1	2	1	1	2	8	>8	D	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
135	ARUL PRABHAKAR	31	M	51-17330767	1	1	0.5	0.5	0	0	1	1	0	0	0	1	1	1	8	7.5--12	HP	1	0	0	2	0	1	2	6	6--7	HP	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
136	ANDAL	28	F	51-23373138	1	0.5	0.5	0.5	0	1	0.5	1	0	0	0	0	0	1	6	5--7.5	LP	1	0	1	2	0	0	0	4	<5	U	Appendicitis	A	A	C	-	--	Acute appendicitis	A
137	LENIN	29	M	51-21542628	1	1	0.5	0	0	0	0.5	1	0	0	0	0	0	1	5	<=5	U	0	0	1	2	0	0	0	3	<5	U	AGE	NA	-	C	-		AGE	NA
138	ANTONY	41	M	51-13812808	0.5	1	0.5	0	0	1	0.5	1	0	0	0	1	1	1	7.5	5--7.5	LP	0	0	1	2	0	1	2	6	6--7	HP	Appendicitis	A	A	S	Appendicectomy		Acute appendicitis	A
139	RENU	30	F	51-12398893	1	1	0.5	0	0	0	0.5	1	0	0	0	1	0	0	5	<=5	U	0	0	0	2	0	1	0	3	<5	U	PID	NA	-	C	-		PID	NA
140	VANI	35	F	51-17196988	1	0.5	0.5	0	0	0	0.5	0	0	0	0	1	1	0	4.5	<=5	U	0	0	0	0	0	1	2	3	<5	U	UTI	NA	-	C	-		Cystitis	NA
141	RAJKUMAR	12	M	51-20510638	1	1	0.5	0.5	1	1	1	1	2	1	0	1	1	0	12	7.5--12	HP	0	0	0	2	1	1	2	6	6--7	HP	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
142	KANCHANA	14	F	51-22913261	1	0.5	0.5	0.5	0	1	0.5	1	0	0	0	0	0	1	6	5--7.5	LP	1	0	1	2	0	0	0	4	<5	U	Appendicitis	A	A	C	-	--	Acute appendicitis	A
143	MARAGATHAM	40	F	51-51316181	0.5	0.5	0.5	0	0	0	1	1	0	0	0	1	1	1	6.5	5--7.5	LP	0	0	0	2	0	1	2	5	5--6	LP	Colitis	A	A	S	Interval Appendicectomy		Appendicular mass	A
144	PRANJAL BURMAN	23	M	51-21431268	1	1	0.5	0	0	1	0.5	1	0	0	0	1	1	0	7	5--7.5	LP	0	0	1	2	0	1	2	6	6--7	HP	Appendicitis	A	A	C	-	--	Acute appendicitis	A
145	SEKARAN	25	M	51-23373536	1	1	0.5	0	0	1	0.5	0	0	0	0	0	0	1	5	<=5	U	0	0	1	0	0	0	0	1	<5	U	Rt ureteric colic	NA	-	C	-		Rt ureteric calculus	NA
146	MUTHULAKSHMI	37	F	51-23637447	1	0.5	0.5	0	0	1	0.5	1	0	0	0	1	1	0	6.5	5--7.5	LP	0	0	1	2	0	1	2	6	6--7	HP	Appendicitis	A	A	S	Appendicectomy		Acute appendicitis+Rt PCOD	A
147	BALAMURUGAN	20	M	51-15981093	1	1	0.5	0.5	0	1	1	1	2	1	2	1	1	1	14	>12	D	1	0	1	2	1	1	2	8	>8	D	Appendicitis	-	-	S	Appendicectomy		Acute appendicitis (gangrene)	A
148	AADHI	48	M	51-15337939	0.5	1	0.5	0	0	1	0.5	0	0	0	0	0	0	0	3.5	<=5	U	0	0	1	0	0	0	0	1	<5	U	Rt ureteric colic	NA	-	C	-		Rt VUJ calculus	NA
149	KATHIRAVAN	15	M	51-22756118	1	1	0.5	0.5	0	1	1	1	0	1	0	1	1	1	10	7.5--12	HP	1	0	1	2	1	1	2	8	>8	D	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
150	KISHORE KUMAR	14	M	51-23229225	1	1	0.5	0	0	1	0.5	1	0	1	0	1	0	0	7	5--7.5	LP	0	0	1	2	0	1	0	4	<5	U	Appendicitis	A	A	C	-	--	Acute appendicitis	A
151	NESAKUMAR	6	M	52-10233764	1	1	0.5	0	0	1	1	0	0	0	0	0	0	0	4.5	<=5	U	0	0	1	0	0	0	0	1	<5	U	Intestinal colic	NA	-	C	-		Intestinal colic	NA
152	MANOHARAN	35	M	51-11311812	1	1	0.5	0	0	0	1	1	0	0	0	1	1	1	7.5	5--7.5	LP	0	0	0	2	0	1	2	5	5--6	LP	Appendicitis	A	A	S	Appendicectomy		Acute appendicitis	A
153	PRABASH KUMAR	21	M	51-21938670	1	1	0.5	0.5	1	0	0.5	1	0	0	0	0	0	1	6.5	5--7.5	LP	1	1	0	2	0	0	0	4	<5	U	Appendicitis	A	A	C	-	Lost to F/U	Acute appendicitis	A
154	VINOTH	8	M	51-22878662	1	1	0.5	0	0	0	0.5	1	0	0	0	0	0	1	5	<=5	U	0	0	0	2	0	0	0	2	<5	U	Non-specific abd pain	NA	-	C	-		Non-specific abd pain	NA
155	SABARINATHAN	38	M	51-31663183	1	1	0.5	0	0	0	0.5	1	0	0	0	1	1	1	7	5--7.5	LP	0	0	0	2	0	1	2	5	5--6	LP	Appendicitis	A	A	C	-	--	Acute appendicitis	A
156	MARIAMMAL	45	F	51-15630155	0.5	0.5	0.5	0	1	0	0.5	1	0	0	0	0	0	1	5	<=5	U	0	1	0	2	0	0	0	3	<5	U	Rt ovarian pathology	NA	-	R	-		Rt adnexal mass for evaluation	NA
157	POOJA	6	F	51-15805820	1	0.5	0.5	0	0	0	1	1	0	0	0	1	0	1	6	5--7.5	LP	0	0	0	2	0	1	0	3	<5	U	Mesenteric adenitis	I	A	S	Appendicectomy		Acute appendicitis	A
158	USHA	27	F	51-20107352	1	0.5	0.5	0	1	1	0.5	0	0	0	0	1	1	0	6.5	5--7.5	LP	0	1	1	0	0	1	2	5	5--6	LP	Appendicitis	NA	NA	C	-		Cystitis	NA
159	ETHIRAJ	30	M	51-13796576	1	1	0.5	0	0	0	0.5	1	0	0	0	0	0	1	5	<=5	U	0	0	0	2	0	0	0	2	<5	U	Non-specific abd pain	NA	-	C	-		Non-specific abd pain	NA
160	MUKTIKANTA NAYAK	31	M	51-21784704	1	1	0.5	0	0	0	1	1	2	0	0	1	1	1	9.5	7.5--12	HP	0	0	0	2	0	1	2	5	5--6	LP	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
161	JAISHANKAR	32	M	51-20845113	1	1	0.5	0	0	0	0.5	1	0	0	0	1	1	1	7	5--7.5	LP	0	0	0	2	0	1	2	5	5--6	LP	AGE	NA	NA	C	-		Typhlitis	NA
162	ELUMALAI	38	M	51-21546486	1	1	0.5	0	0	0	0.5	1	0	0	0	0	0	1	5	<=5	U	0	0	0	2	0	0	0	2	<5	U	Colitis	NA	-	C	-		Colitis	NA
163	NAVEEN	9	M	51-14002684	1	1	0.5	0	0	0	1	1	2	0	0	1	1	1	9.5	7.5--12	HP	0	0	0	2	0	1	2	5	5--6	LP	Appendicitis	A	-	S	Resection/Anastomosis		Meckel's Diverticulitis	NA
164	MICHAEL	11	M	51-13485241	1	1	0.5	0.5	0	0	0.5	1	0	0	0	0	1	1	6.5	5--7.5	LP	1	0	0	2	0	0	2	5	5--6	LP	Appendicitis	A	A	C	-	--	Acute appendicitis	A
165	JANAKI	22	F	51-16752663	1	0.5	0.5	0	0	0	0.5	1	0	0	0	0	0	1	4.5	<=5	U	0	0	0	2	0	0	0	2	<5	U	Rt ovarian pathology	NA	-	R	-		Rt PCOD	NA
166	MURUGAMMAL	47	F	51-20704755	0.5	0.5	0.5	0	1	0	0.5	1	2	0	0	1	1	0	8	5--7.5	LP	0	1	0	2	0	1	2	6	6--7	HP	Appendicitis	A	A	S	Appendicectomy		Acute appendicitis	A
167	SRINIVASAN	28	M	51-27836475	1	1	0.5	0	1	1	0.5	1	0	0	0	0	0	1	7	5--7.5	LP	0	1	1	2	0	0	0	4	<5	U	Appendicitis	NA	NA	C	-		Chronic abd pain for evaluation	NA
168	KALAVATHY	48	F	51-13988055	0.5	0.5	0.5	0	0	1	0.5	1	0	1	0	0	0	1	6	5--7.5	LP	0	0	1	2	1	0	0	4	<5	U	Appendicular mass	I	A	S	Interval Appendicectomy		Appendicular mass	A
169	LAKSHMI	35	F	51-23445870	1	0.5	0.5	0	0	0	0.5	1	0	0	0	0	0	0	3.5	<=5	U	0	0	0	2	0	0	0	2	<5	U	PID	NA	-	R	-		Rt ovarian cyst	NA
170	PATCHAI	33	F	51-18726354	1	0.5	0.5	0	0	0	0.5	1	0	0	0	0	0	0	3.5	<=5	U	0	0	0	2	0	0	0	2	<5	U	PID	NA	-	R	-		Fibroid uterus	NA
171	DEVI	37	F	51-14630486	1	0.5	0.5	0	1	1	0.5	1	2	1	0	0	1	0	9.5	7.5--12	HP	0	1	1	2	1	0	2	7	6--7	HP	Appendicitis	A	-	S	Appendicectomy		Acute appendicitis	A
172	NAGAPPAN	30	M	51-13163183	1	1	0.5	0	0	0	1	1	0	0	0	1	1	1	7.5	5--7.5	LP	0	0	0	2	0	1	2	5	5--6	LP	Appendicitis	A	A	S	Appendicectomy		Acute appendicitis	A
173	JEGANNATHAN	17	M	51-19278374	1	1	0.5	0	0	0	0.5	0	0	0	0	0	0	0	3	<=5	U	0	0	0	0	0	0	0	0	<5	U	Rt ureteric colic	NA	-	C	-		Rt ureteric calculus	NA
174	SAJEETHA	38	F	51-21563828	1	0.5	0.5	0	0	1	0.5	1	0	0	0	0	0	1	5.5	5--7.5	LP	0	0	1	2	0	0	0	3	<5	U	Ileocaecal TB	I	A	S	Interval Appendicectomy		Appendicular mass	A
175	PAVAN KUMAR	33	M	51-10815970	1	1	0.5	0	0	0	1	1	0	0	0	0	0	0	4.5	<=5	U	0	0	0	2	0	0	0	2	<5	U	UTI	NA	-	C	-		UTI	NA
176	RAHUL	13	M	51-23351729	1	1	0.5	0	0	0	1	1	0	0	0	1	1	1	7.5	5--7.5	LP	0	0	0	2	0	1	2	5	5--6	LP	Appendicitis	A	A	S	Appendicectomy		Acute appendicitis	A
177	MUSTAFA	18	M	51-20686053	1	1	0.5	0	0	0	1	1	0	0	0	1	1	1	7.5	5--7.5	LP	0	0	0	2	0	1	2	5	5--6	LP	Appendicitis	A	A	S	Appendicectomy		Acute appendicitis	A
178	USHA	23	F	51-26350847	1	0.5	0.5	0	0	1	1	1	2	0	0	0	0	0	7	5--7.5	LP	0	0	1	2	0	0	0	3	<5	U	Appendicitis	I	NA	R	-		Rt twisted para-ovarian cyst	NA
179	SANTHOSH	11	M	51-22019043	1	1	0.5	0	0	1	1	1	0	1	0	1	1	1	9.5	7.5--12	HP	0	0	1	2	1	1	2	7	6--7	HP	Appendicitis	-	-	S	Appendicectomy		Appendicitis perforated	A
180	KRISHNAN	25	M	51-27839455	1	1	0.5	0	0	1	1	0	0	0	0	1	1	0	6.5	5--7.5	LP	0	0	1	2	0	1	2	6	6--7	HP	Rt ureteric colic	I	NA	C	-		Rt ureteric calculus/pyelonephritis	NA

U	UNLIKELY
LP	LOW PROBABILITY
HP	HIGH PROBABILITY
D	DEFINITE
A	APPENDICITIS
NA	NON APPENDICULAR CAUSE
I	INCONCLUSIVE
S	SURGERY
C	CONSERVATIVE MANAGEMENT
R	REFERRED TO SPECIALIST DEPT